How Middle Managers draw on Cultural Resources to shape their Behaviors during the Orchestration of Ambidexterity

By

Oladipo Adeboye Awojide

A Doctoral Thesis

Submitted in partial fulfilment of the requirements for the award of Doctor of Philosophy of Loughborough University

May 2015

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Acknowledgements

I am grateful to God for the grace and ability of completing this thesis. I would like to sincerely thank my supervisors Dr. Ian Hodgkinson, Professor M. N. Ravishankar and my independent assessor Dr. Angelika Zimmermann for their valuable contributions.

A big thank you to my father Chief Babatunde Bamikefa Awojide and mother Chief Mrs. Folake Awojide for their prayers, financial and moral support. I am most grateful. To my wife Oluwadamilola Awojide and son Oluseyi Joshua Awojide, thank you for your patience, love and for the moral support. Thank you to the leadership and members of RCCG Loughborough and RCCG CRA Nottingham. A big thank you also to my loyal family members and friends.

Finally, I am most grateful to the Managing Director of Brush Electrical Machines Ltd Wayne Pearson, the management team and all employees at the UK branch of Brush.

Abstract

This study is motivated by the growing influence in organisational research on the perspective of culture as a toolkit of resources from which individuals can draw on to develop strategies of action. Research has established that ambidextrous organisations succeed both in incremental and discontinuous innovation. However, there remains a scarcity of study on how managers orchestrate ambidexterity. This thesis extends the ambidexterity research by investigating how managers orchestrate ambidextrous strategies and how these strategies are shaped by elements of the organisational culture in high technology firms. An interpretive case study approach was used to achieve the aims of the study. Focusing on two engineering projects, 55 interviews were conducted alongside documentary reviews and participant observation for 6 months at Brush Electrical Machines Ltd, UK. Analysis of the findings is conducted using thematic analysis to identify common themes and NVivo was used to draw out patterns until relationships among the emerging themes became clearer.

The thesis makes important contributions to the organisational ambidexterity literature by providing useful empirically-driven insights and deconstructing the roles of middle managers in facilitating ambidexterity. The findings of the research indicate that most of the middle managers demonstrated ambidextrous behaviours. These middle level managers enabled their behaviours through diverse cultural resources selected from the organisation's cultural toolkit. Thus, important contributions are made to the literature on organisational culture, specifically on the toolkit perspectives. The thesis takes the perspective that organisational culture should be viewed as heterogeneous and not homogeneous. The study concludes by suggesting that middle management ambidextrous behaviours shaped by cultural resources may be vital for the realisation of improved or sustained competitiveness in organisations.

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CHAPTER 1

Introduction

1.1 Introduction

This chapter introduces the context for the thesis. Specifically, the challenges faced by high technology firms are highlighted before focusing on the need to balance conflicting demands in the task environment on a daily basis for firm survival. Taken collectively, the objective here is to provide the reader with a context to interpret the research objective and question, which concludes this chapter.

1.2 High Technology Firms and their Task Environment

The human trait of ambidexterity (an individual's ability to use both hands with equal skills) has been used by organisation scientists as a metaphor to describe competent organisations (Carmeli and Halevi, 2009). This need for balance between conflicting activities, behaviours and outcomes is prevalent in high technology industries, where high technology firms are confronted with complex technical issues (McNamara and Baden-Fuller, 1999).

Chandrasekaran et al. (2012) affirm that these organisations generally operate in an industry characterised by frequent changes in product/process technologies and increased competitive intensity. They face frequent changes in customer preferences (Bourgeois and Eisenhardt, 1988), technological innovations (Henderson and Clark, 1990) and regulations (Kaplan, 2008) which can result in changes in the strategic goals. Further, given the hyper-competitive nature of the environment (see D'Aveni, 1994), the paradigmatic shifts in technology (see Powell et al., 1996) and the need for fast strategic moves (see Brown and Eisenhardt, 1997), a serious question arises as to whether any renewal is possible and, if it is, whether the models of renewal in matured high technology firms are relevant. Other scholars have drawn the conclusion that high technology firms live on a knife edge where, renewal is likely to be almost impossible (e.g. Christensen, 1997) or the result of luck (e.g. Burgelman, 1994). McNamara and Baden-Fuller (1999) put into doubt some of these theoretical presumptions.

In their research, they document the renewal of a high technology firm from near bankruptcy and paralysis to a high level of success. Their case study demonstrates that renewal did not occur by chance or due to luck, but rather through the application of well tried and tested managerial techniques which included a new CEO, the formation of new team structures and the infusion of new organisational processes.

Moreover, research suggests that high technology organisations are confronted with the dual demands of exploring new products/processes and exploiting existing products/processes (Chandrasekaran et al., 2012). In other words, high technology firms operating in dynamic environments are often left with no choice but to consolidate existing businesses while simultaneously finding new opportunities (Wang and Rafiq, 2012). These new opportunities allow the organisation to reinvent itself in a bid to improve its competitiveness. For example, Brown and Eisenhardt (1997) suggest that particularly in high technology industries, an organisation's innovativeness and new product development have a direct impact on its continued survival and performance. Well known organisations such as Motorola, Ericsson, and Samsung have failed to manage these tensions in their R&D settings and lost their competitive advantage (Chandrasekaran et al., 2012). For high technology organisations, balancing conflicting demands (e.g. organisational ambidexterity) becomes more relevant since these organisations cannot temporally separate the search for new markets and processes from existing markets and processes to remain competitive. Current research, for example, Birkinshaw and Gibson (2004), Jansen et al. (2009), Simsek (2009), Chandrasekaran et al. (2012) and Taylor and Helfat (2009) suggest that ambidextrous organisations can better manage these dual demands. In fact, recent studies find that ambidexterity leads to higher performance for high technology organisations (see Auh and Menac, 2005).

Taking a multilevel approach, Chandrasekaran et al. (2012) suggest that organisational ambidexterity in high technology firms involve three different capabilities at the organisational level. These include the decision risk (strategic level), structural differentiation (project level) and contextual alignment (meso level). *"A decision risk capability helps senior level managers resolve the conflicting tensions that occur when making exploration and exploitation decisions. A structural differentiation capability allows exploration and exploitation projects to coexist within the same physical setting. And a contextual alignment capability at the meso level promotes alignment and adaptability across the strategic and project levels"* (p. 135). These require synchronization across the three levels. Wang and Rafiq's (2012) study which compares UK and Chinese high technology firms also found that ambidexterity is of importance for the development of new product innovation and achieving organisational-wide success, most importantly in high technology organisations which operate in dynamic environments. To survive or to be successful in a high technology environment, which of course are usually characterised by changes in products, technologies and processes, organisations need to simultaneously explore and exploit (Chandrasekaran et al., 2012).

Importantly, the research on organisational ambidexterity has captured specific antecedents or enablers of ambidexterity. Some of these include structural solutions that allow two activities to be carried out in different organisational units (e.g. Benner and Tushman, 2003), contextual solutions that allow two activities to be pursued within the same unit (e.g. Birkinshaw and Gibson, 2004), leadership-based solutions (see Jansen et al., 2009) and specific cultural elements which influences the realisation of ambidexterity (see Wang and Rafiq, 2012). Focusing on the leadership-based solutions, research has suggested that senior managers are in a position to assist with balancing organisational activities in a bid to improve competitiveness (e.g. Simsek, 2009), Smith and Tushman (2005) and O'Reilly and

Tushman (2004). However, middle managers have received less scholarly attention in relation to the organisational ambidexterity research, except for few studies like Taylor and Helfat (2009) and Hodgkinson et al. (2014).

1.2.1 Energy Industry in the European Union

The energy industry comprises of all of the industries involved in the creation and sale of energy, it is a very critical sector globally for households and businesses. Industries under the energy sector include the petroleum industry, the gas industry, the electrical power industry, the coal industry, the nuclear power industry and the renewable energy industry. Specifically in this thesis, the focus is on the electrical power generation industry. Electricity is very important for modern life and it represents around a fifth of all final energy consumed in the European Union (www.europa.eu). The European Union is essentially self-sufficient in electricity generation and trading between member states is of more importance than imports into the Union. The United Kingdom ranks the highest out of all the European Union and Group of Seven (G7) nations both in the gas and electricity market (www.gov.uk/bis).

The energy industry contributes 3.2% of GDP, 5.8% of total investment, 38.1% of industrial investment and 3% of annual business expenditure on research and development, and trade surplus in fuels of £1.3 billion in 2004 to the economy of the United Kingdom (www.gov.uk/bis). Also, since 1980, the energy consumption by individual sectors has changed significantly. There have been rises of 62% for transport, 22% for the domestic sector and 11% for the service sector, whilst consumption by industry has fallen by 29% (www.gov.uk/bis). Industrial consumption of electricity has also varied with business activity. For example, it has risen every year between 1994 and 2000, fell back by 21.5% in 2001 but in 2003 moved up back to the 2000 level and continue to grow in 2004 (www.gov.uk/bis).

The market value for the European power generation industry grew by 5.1% in 2011 to reach a value of $240.3 billion, while in 2016, the European power generation industry is forecast to have a value of $321.1 billion which will be an increase of 33.6% since 2011 (www.marketline.com, 2012). Germany alone accounts for almost 19% of the total European power generation industry value, and overall the degree of rivalry is judged to be strong. The reason for this is the limited growth in the market in recent years (www.marketline.com, 2012).

1.3 Research Objective

The purpose of this thesis is to understand how ambidextrous organisations succeed both in incremental and discontinuous innovation and how this is influenced by the organisational culture. As highlighted earlier, there is limited growth in the European power generation industry. Moreover, the overall degree of rivalry can be described as strong. Competition is intense and competitors are trying to outplay one another by reducing the cost of production and constantly improving the product offerings. Competitors are also engaging in technological and process upgrade to gain competitive advantage in the industry. In such a dynamic business environment like the European power generation industry, the necessity for organisational efficiency and adaptability arises, especially for high technology firms. The degree of turbulence and competitive rivalry requires an adaptation of organisational processes to improve or sustain competitive advantage.

Importantly, in section 1.2, the researcher highlighted that the least of the researched antecedents on ambidexterity is organisational culture. So far, the ambidexterity literature has only considered organisational culture from a specific context (e.g. Gibson and Birkinshaw, 2004) or specific cultural elements (e.g. Wang and Rafiq, 2012) which guides organisation-wide ambidexterity. The research on ambidexterity has not captured how culture may impede

or facilitate the realisation of ambidexterity, particularly at the micro level. Also, traditional managerial perspectives on organisational culture portrays culture as an objective reality made up of consistent attitudes and values which influences thinking, behaviours and actions (see Martin, 1992; Schein, 1992). An alternative perspective postulated by Swidler (1986) perceives culture as a toolkit of cultural resources which can be used by organisational members to navigate organisational life.

Therefore, the overall aim of the research is to explore the orchestration of ambidexterity in practice and how this is influenced or shaped by cultural resources. In achieving the objective of this research, the research question to be addressed is presented below:

How do middle managers draw on cultural resources to shape their behaviours during the orchestration of ambidexterity?

The research question identified suggests using concepts and models from the academic and applied areas of strategic management to assist in identifying the possible future direction for the service as a whole. Rather than assuming homogeneity in organisational culture, this study takes the research on organisational ambidexterity further by investigating the variation in mid-level managerial ambidexterity (e.g. Weber and Dacin, 2011) on two engineering projects (the DAX 4 project and the Optimus project) at Brush Electrical Machines Ltd.

The research has just one research question because the researcher wants to explore an area of research broad enough to stimulate interest and make a contribution, but narrow enough that the research can actually offer a satisfying answer. It must be noted that the findings of the research are unknown to the researcher at this stage. There is enough uncertainty that the researcher is actually motivated to explore and provide insights on.

1.4 Research Context

As highlighted earlier, the case study is conducted within the electrical power generation industry. The research context for the thesis will now be discussed in this section.

1.4.1 Brush Turbogenerators

This empirical research was conducted at Brush Electrical Machines Ltd (Brush Turbogenerators). With manufacturing plants in the United Kingdom, the Netherlands and Czech Republic, Brush is the largest independent manufacturer of turbogenerators worldwide. The Anglo-American Brush Electric Light Corporation was established in 1879 in Lambeth, London to exploit the inventions of Charles Francis Brush (www.brush.eu). Brush initially manufactured lighting equipment (arc lamps and incandescent lights), expanding with the formation of lighting supply companies throughout the country. After an early boom in the promotion of lighting companies, the Electric Lighting Act of 1882 laid down difficult conditions of operating. This resulted in a general period of stagnation in the newly-born electrical industry. However, there were some developments prior to the repeal of the Act in 1888, mainly in the field of industrial electrification (www.brush.eu). Brush was able to thrive on the manufacture of dynamos, motors, switchgear and small transformers. Before the First World War, tramcars and electrical engineering were the mainstays of production. Wartime production was mainly concerned with munitions although vehicle bodies and even aircraft were also manufactured. The sales of electrical equipment remained steady during the period after the First World War. Also, turbine production experienced a great boom after 1918 when some 20 complete turbines with the attendant equipment were delivered each year (www.brush.eu). The first heavy oil engine made its appearance in 1935 and three years later in an attempt to diversify the range of products and to cater for an increasingly important line of business, the firm of Petters Ltd was taken over (www.brush.eu). This was followed by the acquisition of other electrical engineering firms

such as Bryce Berger Ltd in 1940, J & H McLaren Ltd in 1943, Mirrlees, Bickerton and Day Ltd in 1944, National Gas and Oil Engine Company Ltd in 1950, Fuller Electric Ltd in 1957, amongst other acquisitions.

Brush constructed its first Transformer product in 1881, at a time when it was pioneering the electrification of towns in the USA and the UK. Alongside the manufacture of turbogenerators and transformers, Brush also produces voltage regulators and excitation power controllers to meet modern utility needs (www.brush.eu). Some of the generator products which Brush currently manufactures include 2 and 4 pole air cooled turbogenerators, and hydrogen and combined cooled generators. These are used to power combined cycle plants, power stations, offshore platforms, LNG terminals, and pipeline power supply. Also, the current transformer products include 132 kV transmission transformer for Central Networks, 33 kV power transformer for Western Power Distribution, AC indoor, AC outdoor, and DC switchgear. These are used on BP Andrew Platforms, transport infrastructure and for utilities. Brush was acquired by FKI Plc in 1996 and FKI Plc acquired by Melrose Plc in 2008. Brush currently has over 4000 generators and 3,850 transformers installed worldwide. The company's revenue in 2009 was £272m, £282m in 2010 and £287m in 2011.

The research was carried out in the UK branch of the company's generator and transformer divisions. This branch is the headquarters and the main production site for Brush Turbogenerators. The study specifically focused on two engineering projects. These projects include the Optimus project in the transformer division and the DAX 4 project in the generator division.

1.5 Summary of Findings and Contributions of Thesis

This research makes important contributions to theory and holds implications for practice. It makes novel contributions in the areas of organisational ambidexterity, organisational culture, and middle management's contribution to strategy. Focusing on the microfoundations of organisational ambidexterity, the study extends knowledge on how ambidexterity may be built into an organisation. It also makes important contributions and provides evidence to support that middle managerial ambidexterity is possible in practice owing to key cultural resources, especially in large high technology organisations.

Firstly, the current body of research on organisational ambidexterity has typically focused on the macro level, which includes both the firm level and the business unit level (see Mom et al. 2007, 2009). There is shortage of scholarly research at a more micro level. This thesis thus investigates ambidexterity at the individual level, focusing on middle managers on two engineering projects at Brush Turbogenerators.

Secondly, underpinned by Swidler's (1986) conceptualisation, the study makes important contribution on organisational culture, specifically on the literature on cultural resources. This study concludes that organisational culture is not homogeneous but heterogeneous for individual organisational members. Therefore, individuals within an organisation have a degree of liberty in their use of cultural elements or resources.

Thirdly, the research extends the typology of middle management involvement in strategy created by Floyd and Wooldridge (1992, 1997). As an extension to the existing theory, the study suggests that asides the divergent and integrative behaviours of middle managers, middle managers also have the cognitive capacity to balance divergent and integrative behaviours through a multifaceted approach.

This thesis also makes important contribution to practice. The level of environmental dynamism in industries are different for each industry. As such, this thesis suggests that to improve organisational competitiveness, specifically in the electrical power generation industry, efficient strategies which are adaptable on projects and in business units are recommended. Lastly, the behaviours and cultural resources identified in this thesis may be incorporated into training manuals for middle managers in large high technology firms in the energy industry.

1.6 Outline of Thesis

This thesis consists of six chapters. Chapter one captures the context of the researched industry and organisation, the objective of the research as well as the research question. In chapter two, the literature on organisational ambidexterity and organisational culture is presented. The chapter also elucidates the role of middle managements in organisations. The chapter concludes by identifying gaps in the literature. Subsequently a research framework is created.

Chapter three focuses on the research methodology and the research approach used to address the research question. In this chapter, the study emphasises the importance of qualitative methods and justifies the use of a case study approach, thematic analysis and NVivo in analysing the data.

In the fourth chapter, the findings of the research are presented. The findings are based on 55 qualitative interviews with middle managers and senior managers as well as observations and documentary reviews of a large high technology organisation (Brush Turbogenerators). In this chapter, the study presents the findings on the various ambidextrous activities which managers orchestrated as well as the behaviours demonstrated. The chapter also presents the

findings as per the cultural resources which managers used to enable their behaviours during the orchestration of organisational activities.

Chapter five presents the discussion of the findings of the research. Conclusions and directions for future research are consequently drawn in the concluding chapter (Chapter six), in light of the limitations of the study.

CHAPTER 2

Literature Review

2.1 Introduction

The first chapter introduced the research context and highlight the challenges faced by high technology firms. The research question to be addressed was also raised. This chapter offers a detailed review of the organisational ambidexterity, organisational culture and the middle management literatures. Specifically, the literature review will focus on elements of organisational culture which may influence managements' ability to orchestrate ambidexterity. Some limitations of the current debate are captured at the end of the literature review and the conceptual framework is formulated.

2.2 The Concept of Organisational Ambidexterity

"The Roman god Janus had two sets of eyes, one pair focusing on what lay behind, the other on what lay ahead" (O'Reilly and Tushman, 2004: 2).

"A juggler who is very good at manipulating a single ball is not interesting. It is only when the juggler can handle multiple balls at one time that his or her skill is respected" (Tushman and O'Reilly, 1996: 11).

The research on organisational ambidexterity has increased in recent years ranging from a focus on different dimensions, different units of analysis and numerous conceptualisations (Durisin and Todorova, 2012). Scholars have contributed to the ambidexterity debate in different ways, but *"studies using labels such as reconciling exploitation and exploration, the simultaneity of induced and autonomous strategy processes, synchronizing incremental and discontinuous innovation and balancing search and stability tend to refer to the same underlying construct, i.e., ambidexterity"* (Raisch and Birkinshaw, 2008: 376). O'Reilly and Tushman (2004) suggest that ambidextrous organisations engage in two different types of activities, some focused on exploiting existing capabilities for profit, while others are focused on exploring new opportunities for growth; the two require very different strategies,

structures, processes and cultures. The reason for this dual focus is because a successful company with well-established products may soon become uncompetitive unless management knows how and when to adjust traditional business practices and adapt to new situations irrespective of the industry. While some organisations survive many decades and remain prosperous, others fail due to inconsistent managerial strategies. For instance, research suggests that only very few companies established in the United States are likely to make it past 40 years, in most cases, less than 0.1 percent (O'Reilly and Tushman, 2011). The scope of an ambidextrous organisation is highlighted in the table below.

Alignment of	Exploitative Business	Exploratory Business
Strategic intent	Cost, profit	Innovation, growth
Critical tasks	Operations, efficiency, incremental innovation	adaptability, new products, breakthrough innovation
Competencies	Operational	Entrepreneurial
Structures	Formal, mechanistic	Adaptive, loose
Controls, rewards	Margins, productivity	Milestones, growth
Culture	Efficiency, low risk, quality, customers	Risk taking, speed, flexibility, experimentation
Leadership role	Authoritative, top down	Visionary, involved

Table 1: Scope of the ambidextrous organisation (O'Reilly and Tushman, 2004).

Further, March (1991) suggest that central to an organisation's survival is its ability to exploit its current capabilities and assets in a profitable way, as well as simultaneously explore new technologies, markets and customers, i.e. configure and reconfigure organisational resources to capture existing as well as new opportunities. Ambidexterity entails achieving the opposite objectives of exploration and exploitation, flexibility and efficiency, stability and adaptation, short-term profits and gains, and long-term growth (Raisch and Birkinshaw, 2008). "*The idea behind ambidexterity is that an organisation's task environment is always to some degree in conflict so there are always trade-offs to be made"* (Carmeli and Halevi, 2009: 211). Organisational ambidexterity also signifies a firm's ability to manage exploratory and exploitative tensions to survive or even prosper (Andriopoulos and Lewis, 2009).

"Exploration includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery and innovation, while exploitation includes such things as refinement, choice, production, efficiency, selection, implementation and execution" (March, 1991: 71). Raisch and Birkinshaw (2008) and Simsek et al. (2009) suggest that to achieve ambidexterity, firms must significantly undertake exploratory and exploitative activities simultaneously while avoiding the corruption of internal structures and processes. This is supported by studies such as those of Gibson and Birkinshaw (2004), He and Wong (2004), McCarthy and Gordon (2011) and Lubatkin et al. (2006) which have shown that firms that seek to achieve ambidexterity through the simultaneous activities of exploration and exploitation are rewarded by superior financial performance.

2.2.1 Ambidexterity Schools of Thought

The research on organisational ambidexterity can be viewed from two main perspectives. These include *structural ambidexterity* (e.g. Duncan, 1976; Tushman and O'Reilly, 1996; Benner and Tushman, 2003; O'Reilly and Tushman, 2007) and *contextual ambidexterity* (e.g. Gibson and Birkinshaw, 2004; Wang and Rafiq, 2012). The pursuit of ambidexterity is deemed structurally independent in a situation where exploitation and exploration are pursued in the same unit and deemed structurally interdependent in situations where the realisation is achieved in two or more independent units (Simsek et al., 2009). The pursuit of ambidexterity within independent units and interdependent units requires different organisational levers, and presents different organisational challenges such as coordination issues and resource tensions (Simsek et al., 2009). These two streams of research are now discussed.

2.2.2 Structural Ambidexterity (Dual-Structures)

Research suggests that exploration and exploitation are competing organisational activities (Duncan, 1976). The balance of such activities is achieved through structural separation; for

example, exploration may take place in the R&D facility, while exploitation takes place at the manufacturing facility (Jansen et al., 2009). Structural ambidexterity involves separating exploitation and exploration into different organisational units (i.e. separate divisions, departments or teams), with the expectation that top management will facilitate integration to create organisational value (Duncan, 1976; Benner and Tushman, 2003; Gupta et al., 2006; Tushman and O'Reilly, 1996; McCarthy and Gordon, 2011). It allows cross-fertilisation among organisational units while preventing the cross-contamination of each (O'Reilly and Tushman, 2004). In other words, it involves structurally segmenting organisational systems into sub-systems with each developing its own attributes in relation to external environmental forces.

Lawrence and Lorsch (1967) suggest that structural differentiation of business units in organisations or sub-divisions can help organisations achieve ambidexterity or attain multiple competencies across business units. This encourages the co-existence of exploratory and exploitative efforts at different locations while building motivation and unity among the mainstream business of the organisation. Thus, structural ambidexterity helps organisations maintain multiple inconsistent and largely conflicting demands; for example, distinct units are created to research on future needs of customers, develop new markets and keep track of emerging innovative ideas in the industry while other units focus on satisfying the existing customers through sales and marketing activities and handling the daily business transactions of the organisation. This helps in protecting on-going operational activities from interfering with new initiatives hence giving both sets of activities the freedom to achieve their fundamental goals and departmental objectives.

Simsek et al. (2009) describe two types of ambidexterity which are achieved through structural separation. These include *partitional ambidexterity and reciprocal ambidexterity.*

Firstly, partitional ambidexterity is realised simultaneously at the organisational level (Simsek et al., 2009). Each organisational unit has its own management teams, structures, culture, control systems and incentive arrangements (Simsek et al., 2009). Its theoretical grounding can be described as the genesis of the ambidexterity literature whereby Duncan (1976) emphasises the need for organisations to consider dual structures for innovation; one to initiate the innovation and the other to implement/execute the innovation in a bid to achieve long term success. For partitional ambidexterity to be successful, it requires the efforts of senior management to devise coordination and integration of organisational activities (Simsek, 2009).

Secondly, reciprocal ambidexterity involves the pursuit of ambidexterity sequentially and across interdependent organisational units (Simsek et al., 2009). It is a synergistic combination of exploration and exploitation which happens across time and units requiring on-going information exchange, joint problem solving, collaborative decision making and resource flow between managers of the different interdependent units responsible for exploration and exploitation (Simsek et al., 2009). Reciprocal ambidexterity is best conceptualised based on studies presented by Rothamel and Deeds (2004), Holmqvist (2004) and Lavie and Rosenkopf (2006). These studies capture exploration and exploitation alliances within and between organisations. For example, Rothamel and Deeds (2004) suggest that different types of alliances are motivated by different goals, achieve different outcomes and are best employed at different stages of development. They argue that the causal relationship between a venture's alliances and its new product development depends on the type of the alliance. Lavie and Rosenkopf (2006) found that organisations balance exploration and exploitation over time and across domains, thus crossing organisational boundaries. In this scenario, organisations may form alliances to exploit existing knowledge or to explore new opportunities. Holmqvist (2006) also emphasises that experiential learning may be achieved

through inter-organisational collaborations and strategic alliances. The difference between these two types of structural arrangements is that one is achieved separately in different business units, while the other is achieved sequentially in different business units. Despite the separation of such organisational activities, the importance of integrating them cannot be over emphasised. Integration has been described as a necessary step to maximise potential thus leading to expected outcomes in spatially separated activities (Sirmon et al., 2007). Ideas generated from these independent units may be difficult to link to the core activities of the organisation due to their physical detachment, but organisational potentials can be achievable through these integrating mechanisms (Jansen et al., 2009).

It is not just the separation of functional departments and structures that yield value but the process by which these separate and independent activities are coordinated, motivated and integrated to enhance maximum value creation and to attain organisational goals (O'Reilly and Tusman, 2007). When structural separations are made, they lead to effective and efficient organisational output across all the various levels and units (Winter, 2003); but these activities must be effectively allocated, mobilised and integrated to achieve synergy, thus lead to value creation.

Therefore, scholars suggest that a consistent integration mechanism must be used to integrate and coordinate operational activities to achieve ambidexterity (e.g. Jansen et al., 2009 and Tiwana, 2007). Other scholars suggest that this can be achieved through tight coordination at the managerial level (e.g. O'Reilly and Tushman, 2004). This enables the new units to share necessary resources such as cash, talent, expertise and customers with the existing traditional units while ensuring separation in processes, structures and cultures (O'Reilly and Tushman, 2004). Along similar lines, O'Reilly and Tushman (2007) support the need for cohesion of strategic intent on the part of managers, since there may be conflict of interest if separate

organisational units and activities, with different competencies and incentives are not harmonised. If the latter occurs, this can lead to low motivation of staff, decreased performance and poor coordination of activities.

Moreover, Fang et al. (2010) suggest that structures have been used to diffuse the tension of ambidexterity traditionally. These scholars argued that when Steve Job in 1980 began the development of Macintosh, he believed that the corporate environment at Apple was not conducive for the change which he desired; as such he created a separate division for Macintouch which would have its own entrepreneurial free-spirited culture. Therefore, strategic integration from senior teams in organisations which involve driving innovation and benefiting from organisational capabilities occurs at the senior team level (Benner and Tushman, 2003); this was exemplified at Apple (e.g. Fang et al., 2010).

Also, some scholars suggest that exploitation and exploration are contrasting inconsistent elements which must be physically and culturally separated; as such should have different managerial and measurement criteria (e.g. Benner and Tushman, 2003). Other scholars did not find support that structural differentiation affects organisational ambidexterity and business unit performance positively (e.g. Chandrasekaran et al., 2012 and Venkatraman et al., 2007). Yet, other researchers, for example, Gibson and Birkinshaw (2004) and Birkinshaw and Gibson (2004) see ambidexterity as a phenomenon which should be an individual characteristic possessed by employees in a business unit and not just through structural mechanisms. This point is reinforced by Wang and Rafiq (2012) who support the notion of contextual ambidexterity. Contextual ambidexterity involves management building a behavioural context which promotes the realisation of ambidexterity, this is discussed next.

2.2.3 Contextual Ambidexterity

Scholars have previously viewed organisational ambidexterity through structural perspectives as has just been discussed. For example, Duncan (1976) suggest that organisations manage trade-offs between conflicting demands through dual structures. This is to allow each department or unit in an organisation to focus on alignment, while others focus on adaptation. In achieving the desired balance between opposing demands, there was a growing recognition of the role of the processes and systems present in a given context. Brown and Eisenhardt (1997) describe these processes and systems as important in view of the fact that they provide alternatives in developing capacities which organisational structures are intended to create. Adler et al. (1999) however suggest that the empirical evidence for the trade-off argument is remarkably weak. They suggest *metaroutines* (systematising the creative process), j*ob enrichment* (which enables workers to become more innovative and flexible even in the course of their routine tasks), *switching* (moving from differentiates roles for dealing with two kinds of tasks and focusing on each), and *partitioning* (separating different structures for dealing with each kind of role, and simultaneously carrying out routine and non-routine activities), as types of mechanisms which organisations can use to help shift trade-offs. These four mechanisms are embedded in different organisational and inter-organisational context, and two key features of this context are *training* and *trust.* Training and trust proves to be critical contextual factors because if employees lack the knowledge, skills and abilities required for the effective implementation of the four mechanisms, the trade-off cannot be shifted (Adler et al., 1999).

Combining these insights, Gibson and Birkinshaw (2004) made a fundamental conceptual development in the ambidexterity discussion and termed it *contextual ambidexterity*. Contextual because it arises from features of the organisational context, and is the behavioural capacity to simultaneously demonstrate alignment and adaptability across a

business unit, manifested in the specific actions of individuals throughout the organisation: *"Contextual ambidexterity is defined as the capacity to simultaneously achieve alignment and adaptability at a business-unit level; alignment refers to coherence among all the patterns of activities in the business unit; they are working together toward the same goals while adaptability refers to the capacity to reconfigure activities in the business unit quickly to meet changing demands in the task environment"* (Gibson and Birkinshaw, 2004: 209).

Thus, contextual ambidexterity emphasises the integration of simultaneous activities within a single business unit while allowing differentiated effort in both (Wang and Rafiq, 2012). Simsek et al. (2009) also describes two types of ambidexterity which are achieved within the same business unit. These include *harmonic ambidexterity and cyclical ambidexterity.* Harmonic ambidexterity involves the pursuit of ambidexterity in an independent organisational unit. This pursuit is realised simultaneously (Simsek et al., 2009). The simultaneous pursuit of ambidexterity within an independent organisational unit is challenging due to the competition for scarce resources which lead to conflicts, contradictions and inconsistencies (Simsek et al., 2009). Because of the lack of structural separations, the pursuit of ambidexterity in this type of ambidexterity necessitates intertwined operating and strategic activities both in culture, structures and systems as such requiring organisational members to possess integrative abilities.

The second type, cyclical ambidexterity, involves the pursuit of ambidexterity within the same organisational unit, but achieved sequentially. It is theoretical grounded in the literature on punctuated equilibrium (e.g. Gupta et al., 2006). Research on punctuated equilibrium suggests that it involves long periods of exploitation (or relative stability) disrupted by short periods of exploration (or change) (Gupta et al., 2006). Punctuated equilibrium is also known as temporal cycling, or cycling through periods of exploration and exploitation (Gupta et al.,

2006). Research suggests that against the notion of achieving ambidexterity through structural partitioning or dual structures, cyclical ambidexterity requires the sequential allocation of resources and attention to exploitation and exploration. This may reduce some challenges associated with resources and administration as with the case of harmonic ambidexterity, and promote innovative activities (Simsek, 2009). Cyclical ambidexterity may require the changing/switching of structures and routines, practices and procedures, styles and systems of reward, control and resource allocation (Simsek, 2009). The difference between harmonic ambidexterity and cyclical ambidexterity is that activities in the former is realised simultaneously while the activities in the latter is realised sequentially.

Further, contextual ambidexterity involves the collective orientation of employees toward simultaneously pursuing alignment and adaptability; this is manifested in the behaviours of hundreds of individuals and in the unwritten routines that develops in organisations (Birkinshaw and Gibson, 2004). Contextual ambidexterity saturates all functions and levels in a business unit; this is different from the notion of dual structure in which the two demands are kept separate (e.g. Berner and Tushman, 2003). The context created is usually dynamic and flexible to allow individual employees to use their own judgement in dividing their time between alignment-oriented and adaptation-oriented activities in the context of their day-to-day work; both are valued and rewarded accordingly, and processes and systems are developed at the business-unit level to encourage ambidextrous behaviours (Gibson and Birkinshaw, 2004).

Research suggests that when an organisation has achieved contextual ambidexterity, it is evidenced in that every individual in a business unit can deliver value to existing customers in their functional areas (satisfying today's needs), while simultaneously remaining on the lookout for changes and new opportunities in the task environment and acting accordingly to

seize these new opportunities (Gibson and Birkinshaw, 2004). Problems and tensions will arise if a business unit focuses on alignment at the expense of adaptability, or adaptability at the expense of alignment because alignment is geared toward improving performance in the short term while adaptability is geared toward improving performance in the long term (Gibson and Birkinshaw, 2004; Wang and Rafiq, 2012).

There are three main arguments which Gibson and Birkinshaw (2004) make in their study. The first being that contextual ambidexterity is not built on trade-offs between alignment and adaptability whereby one is sacrificed for the other; successful business units simultaneously develop these capacities by aligning themselves around adaptability. Secondly, they suggest that there are different paths to ambidexterity. Thirdly, they identify the important roles played by senior management in creating an organisational context which promotes the realisation of ambidexterity. This is consistent with the findings of Lubatkin et al. (2006) and Smith and Tushman (2005) who both convincingly lend support to the claim of the importance of top management teams in facilitating ambidexterity.

Moreover, Birkinshaw and Gibson (2004) elucidate four ambidextrous behaviours in individuals; these are emphasised below.

- Ambidextrous individuals take the initiative and are alert to opportunities beyond the confines of their own jobs: They highlight that ambidextrous individuals go beyond their normal line of duty, seeking new opportunities and business ideas. They also seek better and easier ways of achieving various tasks which they are accountable for.
- Ambidextrous individuals are cooperative and seek out opportunities to combine their efforts with others: These include seeking new opportunities, collaboration,

discussing issues, and sharing best practices amongst colleagues in their organisations.

- Ambidextrous individuals are brokers, always looking to build internal linkages: These behaviours include building internal linkages across units and various levels of the organisation.
- Ambidextrous individuals are multi-taskers who are comfortable wearing more than one hat: These individuals usually find multitasking easy. Also, they achieve different goals and will offer to help others when needed to complete a task while still focusing on their own duties.

Therefore, it might be argued that contextual ambidexterity represents advancement in the research on organisational ambidexterity. The literature on ambidexterity initially focused on structural ambidexterity, so contextual ambidexterity expands the scholarly focus of ambidexterity as a theoretical concept. It stresses the need for ambidexterity throughout the organisational hierarchy (e.g., by sales people, plant supervisors, office workers) rather than simply a phenomenon controlled by top management teams (Gibson and Birkinshaw, 2004). Gibson and Birkinshaw (2004) argue that contextual ambidexterity occurs through the development of a supportive organisational context by leaders in a business unit. Organisational context includes characteristics of the organisation such as its existing structure, culture, technology, identity, memory, goals, incentives and strategy (Argote and Spektor, 2011). This context will be a carefully created set of systems and processes which collectively allows the meta-capabilities of alignment and adaptability to simultaneously flourish, thereby sustaining the business-units performance. Ghoshal and Bartlett (1994) propose that distributed initiative and mutual cooperation leads to collective learning which requires *stretch, trust, discipline and support*. Birkinshaw and Gibson (2004: 51) build on this and describe it as performance management and social support: *"Performance*

management and social support are equally important and mutually reinforcing; the strong presence of each will create a high-performance organisational context that gives rise to a truly ambidextrous organisation". Social support entails fostering trust and support across the organisation, while performance management entails fostering stretch and discipline across the organisation (Birkinshaw and Gibson, 2004).

Specifically, it is suggested that discipline, stretch, trust and support should be treated as interdependent. A balance between support and trust (seen as a soft element), alongside a balance between discipline and stretch (seen as a hard element) will lead to an individual-level behaviours which will promote initiative, cooperation, organisational learning (Ghoshal and Bartlett 1994) and contextual ambidexterity (Birkinshaw and Gibson, 2004:213). "*...Context does not dictate specific types of action; rather, it creates a supportive environment that inspires an individual to do whatever it takes to deliver results"*.

Thus, contextual ambidexterity can be developed through leadership skills that drive internal processes, align the processes and solidify the process by a continuous pattern of behaviour through the creation of an organisational context that promotes it. The current debate on contextual ambidexterity suggests that success in organisations is not usually achieved through the efforts of one individual, but through collective and continuous efforts of every member. Positive pattern of behaviours amongst employees in organisations leads to increased motivation and promotes sustainable performance, whereas an absence of these positive patterns of behaviours may lead to tensions around the organisation. Moreover, "*…the notion of contextual ambidexterity transcends national boundaries (i.e. UK and Chinese firms) and is applicable in cross-national research"* (Wang and Rafiq, 2012:14). Examples of a wide variety of industries and locations which highlight the benefits of ambidexterity at the firm level include *"...Canadian international new ventures (Han and*

Celly 2008), high technology firms in Taiwan (Li et al. 2008), Indian pharmaceutical firms (Kale and Wield 2008), German high technology start-ups (Kuckertz et al. 2010) and Spanish SMEs in the optometry and telecoms businesses (Cegarra- Navarro and Dewhurst 2007)" (Turner et al. 2012: 2).

2.2.4 Difference between Structural Ambidexterity and Contextual Ambidexterity

Fundamentally, though contextual ambidexterity is a multidimensional construct with alignment and adaptable activities each constituting a separate element, both are interrelated and non-substitutable, and must be pursued in an independent business unit (Gibson and Birkinshaw, 2004). Conversely, structural ambidexterity emphasises the pursuit of these activities in autonomous groups which possess separate structures, processes and cultures within the same organisation, i.e. interdependent business units (Tushman and O'Reilly, 1996). Thus, the traditional concept of structural ambidexterity is different from contextual ambidexterity because activities in the latter are best achieved not through the creation of dual structures, units or departments, but by building a set of processes or systems that enable and encourage individuals to make their own judgments about how to divide their time between conflicting demands for alignment and adaptability (Wang and Rafiq, 2012). Also, contextual ambidexterity avoids the issues of coordination across units which are associated with structural ambidexterity (Gibson and Birkinshaw, 2004). However, contextual ambidexterity is not an alternative to structural ambidexterity, rather it is a complement and both approaches are best viewed as complementary because it emerges through a company's organisational context as well as through its structure (Birkinshaw and Gibson, 2004). Though they both have their differences, they can exist simultaneously in an organisation. The table below summarises the differences between structural ambidexterity and contextual ambidexterity.

	Structural Ambidexterity	Contextual Ambidexterity
How is ambidexterity achieved?	Alignment-focused and adaptability- focused activities are done in separate units or teams	Individual employees divide their time between alignment-focused and adaptability-focused activities
Where are decisions made about the split between alignment and adaptability?	At the top of the organisation	On the front line — by salespeople, plant supervisors, office workers
Role of top management	To define the structure, to make trade-offs between alignment and adaptability	To develop the organisational context in which individuals act
Nature of roles	Relatively clearly defined	Relatively flexible
Skills of employees	More specialists	More generalists

Table 2: Differences between structural and contextual ambidexterity (Birkinshaw and Gibson, 2004).

2.3 Managerial Ambidexterity

Research on organisational ambidexterity reveals that exploration and exploitation have been typically studied at the firm-level (e.g. Benner and Tushman, 2003 and He and Wong, 2004) or at the business unit-level (e.g. Gibson and Birkinshaw, 2004). There is limited conceptual and empirical validated study about exploration and exploitation at the individual level of analysis (Raisch and Birkinshaw, 2008 and Mom et al., 2009). Mom et al. (2007, 2009) addressed this gap in the literature by investigating ambidexterity at the managerial level of analysis. They contribute to the debate on ambidexterity by investigating managers' exploration activities such as searching for, discovering, creating and experimenting with new opportunities, as well as managers' exploitation activities such as selecting, implementing, improving and refining existing certainties (e.g. March, 1991).

Levinthal and March (1993) suggest that the importance of exploration activities is creating variety in experience which is associated with broadening a managers existing knowledge base. Such exploration activities include searching for new organisational norms, routines, structures, adopting a long-term orientation and reconsidering existing beliefs and decisions (e.g. Floyd and Lane, 2000; Tushman and O'Reilly, 1996; Mom et al., 2007). While the

importance of exploitation activities is creating reliability in experience which is associated with deepening a manager's existing knowledge base (Levinthal and March, 1993). Examples of such exploitation activities include using and refining existing knowledge, improving and extending existing competences, technologies, processes and products, and adopting a short-term orientation (Floyd and Lane, 2000; March, 1991; Duncan, 1976; Tushman and O'Reilly, 1996; Mom et al 2007). Also, March (1991: 85) suggest that "*the essence of exploitation is the refinement and extension of existing competences, technologies, and paradigms. Its returns are positive, proximate, and predictable. The essence of exploration is experimentation with new alternatives. Its returns are uncertain, distant, and often negative."* The responsibility of managers (architects of their organisations), includes designing their units in ways that best fit their strategic challenges (Tushman and O'Reilly, 1996). The management of these units which pursue widely different strategies and have diverse structures and cultures is a juggling act which not all managers can comfortably handle because it creates tensions (Tushman and O'Reilly, 1996).

Research suggests that ambidextrous organisations need ambidextrous senior teams and managers (e.g. O'Reilly and Tushman, 2004). Although, some studies have already captured important examples of managers' ambidextrous behaviours (e.g. O'Reilly and Tushman 2004; Tushman and O'Reilly 1996), Mom et al. (2009: 812) defines ambidexterity at the managerial level as *"a manager's behavioural orientation toward combining exploration and exploitation related activities within a certain period of time."* Empirically, Mom et al. (2009) argue that managers can indeed be ambidextrous; i.e., they may engage in high levels of both exploration and exploitation related activities. But, "*managers differ in the extent to which they are ambidextrous. Whereas some are not ambidextrous because they focus on either exploration or exploitation, others are ambidextrous because they engage in high*

levels of both exploration and exploitation related activities (p. 823).” Mom et al. (2009) suggest three related characteristics of ambidextrous managers:

Hosting contradictions: Ambidextrous managers have the motivation and ability to be sensitive to, to understand and to pursue a range of conflicting opportunities and goals as well as have both a short-term and a long-term orientation towards identifying and pursuing opportunities (e.g. O’Reilly and Tushman 2004). These ambidextrous managers deal with conflicts and engage in paradoxical thinking (e.g. Floyd and Lane 2000 and Smith and Tushman 2005). They search for new market needs and technological opportunities while being sensitive to reinforcing existing product and market positions (e.g. Tushman and O’Reilly, 1996).

Multitasking: Ambidextrous managers fulfil multiple roles and conduct a variety of tasks within a certain period of time (Mom et al., 2009). As an example, some scholars suggest that ambidextrous managers are more generalists as against being specialists (e.g. Birkinshaw and Gibson, 2004). Existing literature also suggest that ambidextrous managers fulfil multiple roles which includes competence deployment and competency definition activities (e.g. Floyd and Lane, 2000), they conduct routine and non-routine tasks as well as act outside the narrow confines of their own job (e.g. Adler et al., 1999; Gibson and Birkinshaw, 2004).

Knowledge and skills renewal: Current research documents the importance of ambidextrous managers to acquire and synthesise different types of knowledge and information (e.g. Floyd and Lane 2000). Existing literature also suggests that ambidextrous managers engage in both reliability enhancing and variety increasing learning activities as well as acquire and process both explicit and tacit knowledge (e.g. Lubatkin et al., 2006).

Mom et al. (2007) made three fundamental contributions in their study. They found that knowledge which comes from higher hierarchical levels does not relate to a recipient manager's exploration activities, but rather will be positively related to this manager's exploitation activities. Secondly, bottom-up knowledge inflows of a manager do not relate to this manager's exploitation activities, but rather positively influence this manager's exploration activities. The third finding from their paper being that horizontal knowledge inflows are not related to a manager's exploitation activities, but these knowledge inflows positively relate to the manager's exploration activities. In a more recent study, Mom et al. (2009) found that a manager's decision making authority positively relates to this manager's ambidexterity while the formalisation of a manager's tasks has no significant relationship with this manager's ambidexterity. As regards personal coordination mechanisms, they found that both the participation of a manager in cross-functional interfaces and the connectedness of a manager to other organisation members positively relate to this manager's ambidexterity.

In sum, research on organisational ambidexterity reveals that exploration and exploitation are not mutually exclusive at the firm-level (He and Wong, 2004) or business unit-level (Gibson and Birkinshaw, 2004). Mom et al. (2007) suggest that at the managerial level exploration and exploitation are not mutually exclusive as well. While exploration and exploitation are two separate dimensions, managers may combine both activities. Mom et al. (2007: 925) suggest that *"whereas some managers engage more in exploration activities as compared to exploitation activities, or the other way around, other managers have high levels of both exploration and exploitation."*

2.4 Antecedents of Organisational Ambidexterity

Existing literature on antecedents of organisational ambidexterity has focused on four broad approaches; these include structural solutions that allow two activities to be carried out in

different organisational units, contextual solutions that allow two activities to be pursued within the same unit and leadership-based solutions (Raisch and Birkinshaw, 2008; Simsek, 2009). Nosella et al. (2012) describe antecedents as enabling factors of ambidexterity or those factors which serve as an impetus for the development and realisation of ambidexterity corroborates the suggested antecedents by Raisch and Birkinshaw (2008) and Simsek (2009), but goes further by specifically identifying culture as the fourth antecedent. This is consistent with the assertion of Tushman and O'Reilly (1996) that organisational culture is an antecedent of ambidexterity. These antecedents, however different they may be, are factors required to promote the realisation of different types of ambidexterity.

2.4.1 Structural Architectures as Antecedents of Ambidexterity

The studies of Duncan (1976) and Tushman and O'Reilly's (1996) describe organisational architectures which may promote the realisation of ambidexterity. They both emphasise the necessity of autonomous groups or units in organisations. They contend that keeping organisations arranged in small and autonomous groups produces a sense of ownership and employees have a sense of responsibility for their own departmental results. Their works suggest that a culture of autonomy which is not available in large and centralised organisations is encouraged by structural separations. These autonomous units still remain part of the larger organisation enjoying the benefit of size most importantly in marketing and manufacturing. The size of the organisation is used to leverage economies of scale and scope, while keeping decisions closer to the customers or technology through decentralisation of decision making.

Research also suggest that organisational units pursuing exploration are expected to be small and decentralised with loose processes while organisational units which pursue exploitation are expected to be large, more decentralised, and have tight processes (Benner and Tushman,

2003; Tushman and O'Reilly, 1996). Put differently, Tushman and O'Reilly (1996) suggest that organisational ambidexterity will be achieved when certain business units focus on exploration, and other business units focus on exploitation. O'Reilly and Tushman's (2004) study also demonstrates that structures can serve as enabling factors to the realisation of organisational ambidexterity. They suggest that organisations can compose of multiple tightly coupled subunits which are loosely coupled with each other. Activities in these independent business units are physically and culturally separated from one another, as well as their incentive systems and their management teams. The role of top management team here is ensuring strategic integration across the various units through coordination at the top management team level.

2.4.2 Leadership as an Antecedent of Ambidexterity

Research on both structural and contextual ambidexterity recognises the pivotal roles of senior teams in the pursuit and realisation of organisational ambidexterity (Simsek, 2009). In the discussion on structural ambidexterity, leadership has been described as an antecedent by scholars such as Tushman and O'Reilly (1996) who describe it as crucial for the realisation of ambidexterity. Research suggests that top management teams are responsible for balancing the tensions related to ambidexterity through differentiation and integration (e.g. Tushman and O'Reilly, 1996). O'Reilly and Tushman (2004) suggest a need for senior teams which articulate clear visions, understand the needs of the subunits and have a clearly agreed strategy consensus which is properly communicated. Other scholars, for example, Smith and Tushman (2005) emphasise the use of paradoxical cognition as a mechanism to balance the tensions of exploration and exploitation. Yet, Lubatkin et al. (2006) advocate the use of collaborative behaviours, information exchange and joint decision making as antecedents of

ambidexterity; they suggest that the pivotal role of top management team (TMT) behavioural integration is fundamental to the realisation of ambidexterity in small to medium enterprises.

Other scholars such as Jansen et al. (2008) discuss senior teams' attributes such as transformational leadership which may facilitate organisational ambidexterity. They emphasise that exploration and exploration may be associated with tensions which may result in conflicts for top management teams. In a bid to avoiding such conflicts, they argue that the senior team's shared vision, social integration, and contingency rewards might positively affect ambidexterity. Along similar lines, Jansen et al. (2009) argues that senior teams' social integration serves as a mechanism for integrating independent exploratory and exploitative subunits. The creation of dual structures within an organisation may lead to isolation and the failure of the independent unit's ability to productively couple their efforts (Simsek, 2009). But through the combined efforts of senior teams, project and organisational objectives are achievable (Tushman and O'Reilly, 1996).

However, in the discussion on contextual ambidexterity, current research proposes that the tensions associated with alignment and adaptability are resolved at the individual level, and not at the senior management level. The premise of contextual ambidexterity is the creation of a context which promotes the realisation of ambidexterity by all employees across the organisation. The role of senior management here is to create the systems and processes which supports such context (Gibson and Birkinshaw, 2004). Gibson and Birkinshaw (2004) argue for the necessity of senior management teams to create a high performance behavioural context which encourages all employees to be autonomous and be creative.

2.4.3 Context as an Antecedent of Ambidexterity

The research on contextual ambidexterity by Gibson and Birkinshaw (2004) captures the importance of workers training and trust in relationship with key management as discussed by Adler et al. (1999). They describe these as key facilitators and part of the antecedents of contextual ambidexterity, but contend that there is no overarching research with explains this and that this is only a part of the story. Building on an earlier research by Ghoshal and Bartlett (1994), Gibson and Birkinshaw (2004) argue for the necessity of senior management to develop a particular type of organisational context at the business-unit level which facilitates the capabilities for each individual to divide their time between alignment and adaptability related activities. These activities are both valued and rewarded (Gibson and Birkinshaw, 2004).

Context refers to the systems, processes, and beliefs that shape individual-level behaviours in organisations (Ghoshal and Bartlett, 1994). These processes and systems allow for the avoidance of the challenges related to the coordination of separate organisational structures as postulated by proponents of structural ambidexterity (e.g. Benner and Tushman, 2003; Tushman and O'Reilly, 1996). Birkinshaw and Gibson (2004) and Carmeli and Halevi (2009) both suggest that an ambidextrous organisation can be realised through several means, but what they share in common is the ability to enable individual organisational members to exhibit initiative, cooperation, brokering skills, and multitasking abilities, rather than adopting a dual structural architecture.

Specifically, Birkinshaw and Gibson (2004) suggest the use of performance management (stretch and discipline), and social context (support and trust) to promote behaviours which are necessary to facilitate contextual ambidexterity. Performance management encourages employees to voluntarily strive for better performance, thus stretching themselves in realising

organisational objectives, while social support ensures that employees are supported and trusted as such relying on each other's commitments. The strong presence of performance management and social support will create a high performance organisational context which gives rise to contextual ambidexterity (Birkinshaw and Gibson, 2004; Carmeli and Halevi, 2009). Therefore, *"….when a supportive organisation context is created, individuals engage in both exploitation-oriented actions (geared toward alignment) and exploration oriented actions (geared toward adaptability), and this results in contextual ambidexterity, which subsequently enhances performance*" (Gibson and Birkinshaw, 2004: 213).

2.4.4 Culture as an Antecedent of Ambidexterity

In the discussion on structural ambidexterity, current research has identified the necessity of tight and loose cultures or multiple cultures within the same organisation; *"these cultures are tight in that the corporate culture in each is broadly shared and emphasises norms critical for innovation such as openness, autonomy, initiative, and risk taking. The culture is loose in that the manner in which these common values are expressed varies according to the type of innovation required"* (Tushman and O'Reilly, 1996: 26). This common overall culture is achieved through a strong reliance on the widely shared corporate culture which promotes integration, identification, and sharing of information and resources, as well as providing and promoting consistency, trust, and predictability (Tushman and O'Reilly, 1996). This culture provides the glue which holds the organisation together, and is crucial for the realisation of ambidexterity. The tight-loose culture is also supported by a common vision and supportive leadership which encourages both cultures and allow variations across business units (Tushman and O'Reilly, 1996; Peters and Waterman, 1982).

However, in the discussion on contextual ambidexterity, Gibson and Birkinshaw (2004) contend that organisational culture has important similarities with the related concepts of

organisational context, though both concepts have their differences. The difference between context and culture as an enabler of contextual ambidexterity is captured by Wang and Rafiq (2012) who suggest that the context described by Gibson and Birkinshaw (2004) reflect the processes and systems of the business unit. This is different from the underlying values and norms associated with organisational culture. Wang and Rafiq (2012) thus conceptualised ambidextrous organisational culture consisting of shared vision and organisational diversity as antecedents or enablers of contextual ambidexterity.

In sum, these antecedents described above are important factors which determine if ambidexterity will be realised in an organisation or not. The review of literature reveals that the least of the researched antecedent is organisational culture. Therefore, this thesis identifies a gap in this area of the ambidexterity literature. What follows is a review of the literature on organisational culture.

2.5 The First Wave of Cultural Analysis

2.5.1 Creation of Organisational Culture

Research suggests that organisations are historically bound in that they partially reflect the unique circumstances of their founding, the unique personalities of their founders and the unique circumstances of their growth (Barney, 1986). These unique experiences of organisations are often reflected in their cultures. Organisational culture is developed as organisations learn to cope with problems of direction and flexibility as well as problems of external adaptation and internal integration (Schein, 1990). The process of organisational culture formation is first a process of creating a small group (Schein, 1991). It begins with leaders who impose their own personal values and assumptions on a group. Once such a group becomes successful and such assumptions become taken for granted, a culture that will define the later generation has already been created (Schein, 1992). This culture now defines

what kinds of leadership will be acceptable and also defines leadership across such an organisation (Schein, 1992). Schein (1991: 14) argues that in most organisations, the process will most likely involve "*a single person (founder) who has an idea for a new enterprise. The founder brings in one or more other people and creates a core group that shares a common vision with the founder. That is, they all believe that the idea is a good one, is workable, is worth running some risks for, and is worth the investment of time, money, and energy that will be required. The founding group begins to act in concert to create an organisation by raising funds, obtaining patents, incorporating, locating space, and so on. Others are brought into the organisation as partners and employees, and a common history begins to be built. If the group remains fairly stable and has significant shared learning experiences, it will gradually develop assumptions about itself, its environment, and how to do things to survive and grow."*

Therefore, the impact of founders is the most important factor for cultural beginnings. They are responsible for choosing the basic mission and the environment in which the new group will operate and compete, as well as responsible for choosing group members and defining how the group will initially define and solve its problems of external adaptation and internal integration (Schein, 1992). Because they had the original idea, they will normally have their own notion based on their own cultural history and personality of how to fulfil the idea (Schein, 1992).

Gagliardi (1986) describes four phases in the genesis of an organisation's value. The first phase is during the creation of the organisation where the leader purposefully uses a vision or a set of specific beliefs as a point of reference for evaluation when defining objectives and during task assignation to organisational members. Initially, some members of the organisation may not share the idea of the leader, but the leader has the power to orient their

behaviours in the desired direction in certain situations. In the second phase, if the ideas and behaviours oriented by the leader achieve some level of success, the behaviours are likely to be shared by all organisational members and used as a reference point for future actions. This may go a long way in influencing choice of means and objectives even where the leader has no direct control. In the third phase, when desired results are continuously achieved, and organisational members are reassured by this occurrence, the focus of the organisation now turns to identifying, defending, and fighting for the cause (something desirable and important) rather than the effects (e.g. evidence of the validity of its belief). This ideal now becomes part of an organic ideology of the organisation. In the fourth and final phase, organisational members are no longer consciously aware of the values and the shared values are taken more and more for granted; these values now influence their behaviours and subsequently become taken-for-granted assumptions. Once the organisational culture is established, it prescribes for its leaders, creators, and inheritors certain ways of believing, thinking, and acting (Bate, 1984).

2.5.2 The Concept of Organisational Culture

Peters and Waterman (1982) made the term organisational culture popular after their publication *"In Search of Excellence"*. Culture had before then evolved from the social anthropology and was used to describe qualities of humans as passed from one generation down to another. Organisational culture is *"a pattern of shared basic assumptions that a group learns as it solves its problems of external adaptation and internal integration that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems*" (Schein, 1992: 12). It is a system of shared values which defines what is important, and norms which defines appropriate attitudes and behaviours (Chatman and Cha, 2003). Culture has also been defined as the set of important understandings (often unstated) that members of a community share in

common (Sathe, 1983), it helps people organise their actions (Swidler, 2001). Other definitions of culture as evidenced from literature include those offered by Barney (1986), Williams et al. (1994) and O'Reilly and Chatman (1996). Barney (1986: 657) defines organisational culture as *"a complex set of values, beliefs, assumptions, and symbols that define the way in which a firm conducts its business. In this sense, culture has pervasive effects on a firm because a firm's culture not only defines who its relevant employees, customers, suppliers, and competitors are, but it also defines how a firm will interact with these key actors."* Williams et al. (1994) describes it as the way things are done around here or the way we think about things around here. It represents an active and living phenomenon by which key members of organisations create shared meaning (Berson et al., 2008). Culture can be a driver of possibilities or of failures. These definitions suggest that organisational culture may be an important factor in the survival or failure of organisations.

Other researchers have conceptualised organisational culture as the products of histories of organisational learning (e.g. Sorensen, 2002), while Schein (1992) suggest that it reflects an organisations effort to cope and learn and it is the residue of the learning processes. As emphasised earlier, this culture is strongly influenced by the shared experiences in the organisations early history and once this culture is established, the organisations basic assumptions are very difficult to change (Schein, 1992). Weick (1985) argued that organisational culture is characterised by, and is the product of, attempts by organisations to impose coherence, order and meaning on its experience. It appears in the informal norms, values, social networks, stories, heroes and myths that have evolved over time in organisations; and as organisations get older, part of their learning is entrenched in the shared expectations concerning how things are meant to be done (Tushman and O'Reilly, 1996). Furthermore, Martin and Siehl (1983: 52) emphasise that four sentences capture the essence of much of the organisational culture research. *"First, cultures offer an interpretation of an*

institution's history that members can use to decipher how they will be expected to behave in the future. Second, cultures can generate commitment to corporate values or management philosophy so that employees feel they are working for something they believe in. Third, cultures serve as organisational control mechanisms, informally approving or prohibiting some patterns of behaviour. Finally, there is the possibility, as yet unsupported by conclusive evidence, that some types of organisational cultures are associated with greater productivity and profitability." Research suggests that the concept of culture has been central to the study of anthropology and folklore for over a century (Hatch, 1993). Practitioners of the culture discipline have produced an important body of literature during the 1940s and 50s; some of the works dealt with customs and traditions of work organisations directly (Hatch, 1993). Though the study of organisational culture began around the early 1970s, it was not until the 1980s that management scholars widely embraced the culture concept (Hatch, 1993).

Some organisations have tight cultures, others are loosely coupled, yet some have a mixture of both. Organisations that are loosely and tightly coupled usually have a culture with strong set of values which simultaneously encourages creativity as well as innovativeness (Peters and Waterman, 1982). Tight cultures emphasises norms which are useful for promotion of innovation such as openness, autonomy, initiative and risk taking; these are broadly shared among organisational members (Tushman and O'Reilly, 1996). Conversely, loose cultures emphasise the need to vary the common values according to innovation types required by the organisation (Tushman and O'Reilly, 1996). But the existence of multiple, possibly contradictory cultures within the same organisation makes the management of culture all the more problematic (Barney, 1986). Some of these contradictory cultures have been described as subcultures or counter cultures (e.g. Martin and Siehl, 1983). Similarly, some organisational cultures are very strong and cohesive; but either strong or weak, culture has powerful influences across organisations (Deal and Kennedy, 1982, 1988). For example,

culture affects who gets promoted, and what decisions are made. Corporate cultures have major influences on the success of organisations; it may give an organisation an edge above its competitors and assist managers in knowing why the organisation is succeeding or failing. A common overall culture does not just promote integration and encourages identification and sharing of information and resources; it also provides consistency and promotes trust and predictability (Tushman and O'Reilly, 1996). Cultures guide behaviours and help employees do their daily routines much better by creating informal rules which spell out how they are expected to behave and make them feel better about what they do hence assisting them to work harder (Deninson, 1990). Organisational culture can be a key to short-term success, providing competitive advantage, and long-term failure if not managed correctly, creating obstacles to innovation and change which is necessary for organisational success (Tushman and O'Reilly, 1996).

Importantly, the importance of organisational culture cannot be overstated. Not only does it promote integration and encourage identification and sharing of information and resources, it also provides consistency and promotes trust and predictability (Tushman and O'Reilly, 1996). Schein (1991:15) suggests that "*organisational cultures provide group members with a way of giving meaning to their daily lives, setting guidelines and rules for how to behave, and, most important, reducing and containing the anxiety of dealing with an unpredictable and uncertain environment."* Culture has been described as a driving force of an organisation (O'Reilly and Chatman, 1996) and is regarded by some as the most important competitive advantage a company has (e.g. Cameron and Quinn, 1999). Organisational culture is holistic and socially constructed having influences on beliefs and behaviours at every level in an organisation and manifesting itself in a wide range of features of organisational life (Detert et al., 2000). Besides, organisational culture appears in the informal norms, values, social networks, stories, heroes and myths that have evolved over time in organisations; and as

organisations get older, part of their learning is entrenched in the shared expectations concerning how things are meant to be done (Tushman and O'Reilly, 1996). Some organisational cultures are very strong and cohesive; but either strong or weak, culture has powerful influences across organisations (Deal and Kennedy, 1982, 1988). Kotter and Heskett (1992) in their study of strong and weak corporate cultures suggest that some organisations with strong cultures are still able to adapt to changing environments. These organisations have sets of interlocking core beliefs about the importance of meeting the needs of its stakeholders and adapting to change. Kotter and Heskett's (1992) research appears to validate the claims that there are strong relationships between strong cultures, adaptive cultures, and effectiveness. Strong culture expresses through artefacts core values which are shared by majority members of an organisation (Martin and Siehl, 1983). Corporate cultures have major influences on the success of organisations; it may give an organisation an edge above its competitors and assist managers in knowing why the organisation is succeeding or failing.

Schein (1992) identifies some commonly used words which are related to culture. These words highlight one critical aspect of culture - the idea that it is a shared phenomenon. These words include observable behavioural regulation, group norms, formal philosophy/ideology, climate and espoused values. The observable behavioural regulations when people interact include the language they use, the customs and traditions which evolve and the rituals which are employed in a wide variety of situations whereas group norms are the implicit standards and values which evolve in working groups. Another scholar, O'Reilly (1989: 12) describes norms as "*expectations about what appropriate or inappropriate attitudes and behaviours are. They are socially created standards that help us interpret and evaluate events. Although their content may vary, they exist in all societies and, while often unnoticed, they are pervasive.*" Espoused values include the articulated, publicly announced principles and values

which the group claims to be trying to achieve, for example, product quality or price leadership. The climate is the feeling which is conveyed in a group by the physical layout and the way in which members of the organisation interact with themselves or with customers and outsiders, while the formal philosophy is the broad policies and ideological principles that guide a group's actions towards stockholders, employees and customers. *"Ideology can be seen as a set of overarching values that can serve as a prescription for action vis-à-vis other groups and the broader environment, especially in areas that are difficult to explain and manage. It is the conscious component of the total set of assumptions that make up culture. It also reflects ideals and future aspirations as well as current realities and thereby function as a guide and incentive system to members*" (Schein, 1992: 89).

All of the commonly used words highlighted above are related to culture and/or reflect culture because they are held by group members in common. Therefore, culture is defined as the set of assumption, values, norms, philosophies, ideologies, beliefs, and artefacts which are collectively shared in an organisation, and which influences the behaviours of organisational members.

2.5.3 Approaches to the study of Organisational Culture

Smircich (1983) identifies two broad perspectives on the study of culture and organisational analysis. The first perspective sees organisational culture as an important lever which managers can influence and use to direct the course of their organisations. The second perspective sees culture as a root metaphor for conceptualising organisations. This second perspective adopts the idea of culture as an epistemological device to frame the study of organisation as social phenomenon. These dual perspectives are explained below.

Culture as an Organisational Variable

Research suggests that the performance of organisations depend on the extent to which the values of employees are aligned to the company strategy and culture is subject to conscious manipulation by management who can direct it to their desired end (e.g. Ogbonna and Harris, 2002). The views on weather culture can be managed or not has resulted in serious academic debates (Ogbonna and Harris, 2002). Firstly, some researchers hold the view that culture is an organisational variable which, along with other factors, is susceptible to either complete or partial control under certain conditions (Ogbonna and Harris, 2002; Ogbonna and Harris, 1998). Proponents of this perspective include Bate (1994), Silverzweig and Allen (1976) and Wilkinson et al. (1996). They adopt the view that culture is an organisational variable which is subject to the direct control of management. Harris and Ogbonna (2002) and Smircich (1983) describe them as *functionalists.* This functionalist perspective of the management of culture is evident in the arguments of some early culture researchers who support the links between strong cultures and organisational performance (e.g. Ouchi, 1981; Peters and Waterman, 1982; Wilkins, 1984). These scholars contend that cultural artefacts as well as the art of management are powerful symbolic means of communication which can be used to build commitment in an organisation, convey management's philosophy, rationalise and legitimise activities, as well as motivate employees and encourage socialisation (Smircich, 1983). Proponents of this perspective emphasise that organisations which has an internal culture that supports their strategies are more likely to be successful and that symbolic devices can be used to mobilise and channel the energies of organisation members (Smircich, 1983). Others such as Morgan (1993) argue that corporate cultures drive strategy and specifically that culture can influence strategy formulation. From Morgan's research, it is suggested that *"...top management's behaviour reveals organisational culture more clearly because those at this level are the most visible members of the organisation, and they are*

perceived as controlling such desired rewards as promotions, budget allocations, and work assignments" (Morgan, 1993: 113). Top management can control culture through their personal behaviours and through the formal systems which they create (Morgan, 1983). The overall research perspective of this school of thought is that organisational culture is a variable which managers can mould and shape in certain ways consistent with their strategic purposes (Smircich, 1983; Ogbonna and Harris, 1998).

Secondly and similar to the above perspective, research captures the view that culture as an organisational variable may be influenced, although this is fraught with difficulties (e.g. Martin, 1985; Harris and Ogbonna, 2002; Ogbonna and Harris, 2002; Ogbonna and Harris, 1998). The proponents of this perspective, similar to the first, perceive culture as complex but they emphasise that whilst culture is not easily controlled, it may be manipulated under certain and rare organisational conditions (e.g. Martin, 1985; Meek, 1988; Ogbonna and Harris, 1998a), such as during the formation of organisations and leadership turnover (Ogbonna and Harris, 2002). Other authors (e.g. Casey, 1999; Ray, 1986; Willmott, 1993) emphasise that attempts to manipulate values of employees may raise a number of ethical issues and challenges. Consistent with the perspective above, some scholars (e.g. Ackroyd and Crowdy, 1990; Anthony, 1990; Ogbonna, 1993) suggests that culture may be influenced but that trying to influence it may result in often unpredictable and unintended consequences. While the scholars listed above have described ways in which an organisation's culture can be managed, Barney (1986) suggests that some organisational cultures resist planned change and some may be more liable to change than others (e.g. young and small firms often have more flexible organisational cultures than older and larger firms).

Culture as a Root Metaphor for Conceptualising Organisations

Some scholars genuinely question whether organisational culture is indeed manageable (e.g. Ogbonna and Harris, 2002; Smircich, 1983). The view that culture is not subject to conscious manipulation by management who can direct it to their desired end is best exemplified by the works of researchers who have been described as '*culture purists'* (e.g. Harris and Ogbonna, 1999; Gagliardi, 1986; Martin, 1992). These researchers reject the view that culture can be managed or manipulated in any way. This perspective is evident in the works of researchers who perceive culture as a deep, complex, and an all-embracing phenomenon which is difficult to conceptualise and impossible to operationalise adequately for the purpose of conscious management intervention (e.g. Gagliardi, 1986; Krefting and Frost, 1985). Gagliardi (1986) suggests that organisational cultures usually change in order to remain what they have always been. Others such as Legge (1994) agree that organisational culture can and does change, but the direction and impact of the change cannot be subject to the conscious actions of management. Other researchers suggest that it is likely that organisational cultural development is not responsive to the direct attempts at controlling it by management as some scholars believe (Martin and Siehl, 1983).

Research suggests that culture is not an independent variable, nor can it be created, discovered or destroyed by the whims of management (Meek, 1988). Organisational culture as such may not be straightforwardly created or managed by individuals, but it may be that culture simply exists and management may capitalise on the perceived positive effects and minimise the perceived negative effects (Martin and Siehl, 1983). Martin and Siehl (1983) argue that, at best, managers may slightly modify the direction of a culture, rather than having a major influence on, or control over the direction of its development.

Smircich (1983) suggest that organisational culture may be viewed as a root metaphor by which organisations may be understood, emphasising culture as something which an organisation is, as against something which it has. Smircich (1983: 347) explains that *"culture as a root metaphor promotes a view of organisations as expressive forms, manifestations of human consciousness. Organisations are understood and analysed not mainly in economic or material terms, but in terms of their expressive, ideational, and symbolic aspects."* Culture as a root metaphor shifts the attention of the researcher from what organisations accomplish and how they accomplish it more efficiently to how are organisations accomplished and what it means to be organised (Smircich, 1983). Meek (1988) also emphasise the necessity to treat organisational culture as emerging from social interaction (i.e. treating it as something that an organisation 'is', not as something that an organisation 'has'). Meek suggests that treating culture as described above has some research implications: "*If culture is regarded as embedded in social interaction, that is, as something that is socially produced and reproduced over time, influencing people's behaviour in relation to the use of language, technology, rules and laws, and knowledge and ideas (including ideas about legitimate authority and leadership), then it cannot be discovered or mechanically manipulated; it can only be described and interpreted*" (Meek, 1988: 463).

Moreover, other scholars such as Harris and Cronen (1979) describe organisational culture as a *master contract* which includes the organisations self-image, and constitutive and regulative rules that organise beliefs and actions in light of the image. This master contract is developed out of an on-going interpersonal interaction which provides the basis and context for further interaction. Smircich (1983: 350) suggests that *"the understanding of organisations as cultures - structures of knowledge, cognitive enterprises, or master contracts –is strikingly similar to the notion of paradigm as it is applied in scientific communities"*, as such viewing organisations through this perspective opens up new avenues for the understanding of the

phenomenon of organised activity. Other researchers who adopt this perspective frequently suggest that culture is an integral part of an organisation and not merely a variable subject to the control of top management (Ogbonna and Harris, 2002). It has been argued that employees can see through and sometimes sabotage the actions of those attempting to control their thoughts and feelings (Ogbonna and Harris, 2002). As an example, in the study conducted by Ogbonna and Harris (1998), they found that although alterations to material manifestations (artefacts) and cultural values at Westco (a pseudonym) had occurred, it was only as a result of compliance and not a genuine change.

The cultural dynamics model created by Hatch (1993) and identified earlier offers a definition of culture as constituted by continuous cycles of action and meaning-making shadowed by cycles of image and identity formation. Based on this, Hatch (1993: 686) suggests that "*the new goal be an explanation of organisational culture as the dynamic construction and reconstruction of cultural geography and history as contexts for taking action, making meaning, constructing images, and forming identities.*"

However, the perspective that the culture of an organisation can be easily influenced and the counter perspective that organisational culture cannot be changed may represent an incomplete account of the complexity and dynamism of the organisational culture concept. For example, although from Meek's (1988) study it is emphasised that culture as a whole cannot be manipulated or turned on and off; the study recognises that some are in a better position than others to attempt to intentionally influence aspects of it. Also, though Morgan's (1993) study argues that top management are in a unique position to reinforce existing culture or change it in response to important stimuli, the study recognises that shared and taken-for-granted assumptions which make up corporate culture are the result of complex social processes are not easily or quickly altered. Therefore, consistent with the assertion of

Smircich (1983) who argues that culture is something which an organisation is, as against something which it has, the phenomenon 'organisation' itself will be treated as 'culture' in this thesis.

2.5.4 Different Perspectives on the Study of Organisational Culture

To shed more light on the nature and complexity of organisational culture, and to understand organisational life more fully, Meyerson and Martin (1987), Martin (1992) and Martin (2004) identified different perspectives which have been adopted in the study of organisational culture. These perspectives include the integration perspective, the differentiation perspective and the fragmentation perspectives. These perspectives are briefly explained below.

The Integration Perspective

Martin (1992) suggests that the integration perspective reflects a consensus across an organisation; i.e., there is absence of ambiguity in the interpretation of the manifestations of culture by organisational members and the interpretations are clear to all. Culture can as such be defined as a pattern of shared basic assumptions (e.g. Schein, 2004). "*Integration assumes that actors within a collective interpret the manifestations in the same way and that they perceive those manifestations as being consistent with each other*" (Kappos and Rivard, 2008: 603). The integrative perspective exemplifies a strong or desirable organisational culture which thrives on consensus and consistency (Wilson, 2001). Organisational members share the same values which are consistent with formal practices, norms and attitudes, and these in turn promotes a sense of shared loyalty and commitment (Wilson, 2001).

From the above, it is evident that studies conducted from an integration perspective have three crucial characteristics. The first being that all cultural manifestations mentioned are interpreted as consistently reinforcing the same themes across the organisation. Secondly, all members of the organisation are said to share in an organisational wide consensus. Thirdly,

the organisational culture is described as clear and free of ambiguity (Martin, 1992). Therefore, integration perspective appears to support that employees share the values and opinions of the top management, and organisational members are working together in apparent harmony and consensus.

The Differentiation Perspective

Research conducted from a differentiation perspective describes cultural manifestations as sometimes inconsistent. This perspective does not assume a collective organisational-wide consensus on interpretations of manifestations; instead, various groups within an organisation interpret the manifestations of culture differently (Martin 1992, 2002). Research conducted from this perspective channels ambiguity so that it does not intrude on the clarity which exists within these subcultural boundaries (Martin, 1992). In this case, consensus may only exist at the subgroup level or within the boundaries of a subculture; within these boundaries, all is clear. These subcultures may exists alongside each other in an organisation either in harmony, in conflict, or be indifferent to each other (Martin, 1992). This perspective is consistent with scholars who assume that organisations may have different subcultures, and that organisations do not usually have a singular monolithic culture (e.g. Hofstede, 1998; Martin and Siehl, 1983; Boisnier and Chatman, 2003). These subcultures may relate to different jobs, levels of status, and class within an organisation (Wilson, 2001).

The Fragmentation Perspective

Studies conducted from a fragmentation perspective focus on ambiguity as the essence of culture. *"From a fragmentation perspective, an organisational culture is a web of individuals, sporadically and loosely connected by their changing positions on a variety of issues. Their involvement, their subcultural identities, and their individual self-definitions fluctuate, depending on which issues are activated at a given moment" (Martin, 1992: 153).* This perspective in which ambiguous interpretations of manifestation exists is considered as

the hallmark of some cultures and ambiguity is the norm (Martin, 1992). Unlike the integration and the differentiation perspective which produces a clear cultural boundary and subcultural boundaries respectively, the fragmentation perspective produces a fragmented view of the cultural manifestations (Martin, 2002). In this case, there is never a consensus, consistency or clarity of the cultural manifestations. Therefore, consensus and dissensus are issue specific and are always in constant fluctuation and there is no stable organisation-wide or subcultural consensus in existence. Clear consistencies and clear inconsistencies are rare.

The table below captures the major differences and characteristics of the three different perspectives.

Perspective	**Integration**	**Differentiation**	**Fragmentation**
Orientation to consensus	Organisational-wide consensus	Subcultural consensus	Multiplicity of views (no consensus)
Relation among manifestations	Consistency	Inconsistency	Complexity (not clearly consistent or inconsistent)
Orientation to ambiguity	Excludes it	Channel it outside subcultures	Focus on it
Metaphors	Clearing in jungle, monolith, hologram	Island of clarity in sea of ambiguity	Web, jungle

Table 3: Perspectives on the study of organisational culture (Martin, 1992).

Consequently, Martin (1992, 2002) suggest that any organisational culture contains elements consistent with the three perspectives described above and culture can only be understood when all three perspectives are used because they are complementary and offer a wider range of insights beyond any single viewpoint. *"When any single organisation is viewed from all three perspectives, a greater understanding emerges than if it were viewed from any single perspective. If any cultural context is studied in enough depth, some things will be consistent,*

clear, and generate organisational wide consensus. Simultaneously, other aspects of the culture will coalesce within subcultural boundaries and still other elements of the culture will be fragmented, in a state of constant flux, and infused with confusion, doubt, and paradox (p.4).” Therefore, it is implied from these studies that this multi-perspective approach to the study of organisational culture acknowledges areas that are often excluded in researches where only one perspective is used. Also, from the study of Martin (1992, 2002), it is emphasised that in all the three perspectives identified, there may be some individual deviations, but the focus of these studies is always consensus. Importantly, the three perspective framework serves as a meta-theory because it incorporates many theoretical paradigms in a single framework.

2.6 The Influence of Organisational Culture on Strategy

Scholz (1987) suggests that an organisational strategy can be described as an organisation’s overall expression of its main objectives as well as of its main means of accomplishing such objectives. Similarly, Lorsch (1986) argues that strategy can be described as a stream of decision taken over time by senior management which reveals their goals and what they seek to achieve as well as the means to achieving these desired objectives. Organisational strategies are quite symbolic and research suggest that *“the traditional view of strategy sees its function as matching internal resources to environmental opportunities and threats, in order to promote present and future competitive advantage”* (Green, 1988: 126).

Ansoff (1981) describes organisational culture as a contingent variable in the process of strategy formulation. Organisational culture although seen as a result of human enactment is part of the environment and is seen as an identity enhancing force (Morgan, 1993). Organisational culture, once established, has important influences on the strategy of an organisation. Although a judiciously shaped strategy may make or break a company, the

influence of the organisational culture is paramount because it may make or break the strategy (Green, 1988). Similarly, Lorsch (1986: 95) argued that *"culture affects not only the way managers behave within the organisation, but also the decisions they make about the organisation's relationships with its environment and its strategy."* From Lorsch's research, one senior manager discussing about the relationship between culture and strategy suggests that "*it is a closed loop"* (p.97). Therefore, it is suggested that top managers' strategic choices are underlined by the belief systems or culture of their organisations; this culture developed over a long period of time, influences managerial decisions. The culture influences the strategy and the strategy influences the culture. Moreover, whether treated as an organisation variable or as a way of conceptualising an organisation, the idea of culture focuses attention on the expressive, non-rational qualities of the experience of the organisation (Morgan, 1993). Additionally, research suggests that culture assumes greater importance and relevance at some significant points in the development of an organisation (e.g. Morgan, 1993). There is need to pay particular attention to it when organisations change their competitive strategy, when they diversify, or when they are experiencing rapid growth (Morgan, 1993). When organisations shift their strategic direction, the culture of the organisation may be a source of strength or of weakness (Schwartz and Davis, 1981). Organisational culture has an important influence on strategy for two main reasons. Firstly, it influences the success of the organisation and secondly, it can make an important contribution to the creation and maintenance of strategic fit (Scholz, 1987).

Research suggest that organisational routines deeply buried in organisational cultures and subcultures may be the most accurate reflection of why some organisations succeed while others fail with their strategies (Schwartz and Davis, 1981). Organisational culture shared by most members of an organisation serves as directional information as regards where the organisation is going and how it may get there thus influencing the strategy (Scholz, 1987).

Green (1988) suggests that an important prerequisite for successful strategy implementation is the possession of an appropriate culture which is widely shared within an organisation. Thus, organisations whose cultures are widely shared and support their strategies are more likely to be successful (Smircich, 1983). Other scholars suggest that *"it is organisational culture rather than strategy which is the key to understanding organisation success. If the culture is right, then the 'right' strategy can be implemented; and it is the organisational culture which is the lubricating oil or, more generally, the spanner in the works"* (Green, 1988: 123).

Organisational culture creates consensus about strategic direction by facilitating the fit among the organisation's internal systems (e.g. Golden, 1992) and functions as a normative 'glue' which holds together the different components of an organisational system (e.g. Smircich, 1983; Meyerson and Martin, 1987). Most organisations will find it hard to perform well in a competitive environment if their structure, systems, people and culture are not internally consistent and fit their strategy (Schwartz and Davis, 1981). *"Strategic fit is the situation in which all the internal and external elements relevant for a company are in line with each other and with the corporate strategy"* (Scholz, 1987: 78). It is a phenomenon which represents the integrative nature of the overall strategy. Scholz (1987) further suggests organisational culture as a potential solution for solving the problem of strategic fit. The problem of strategic fit calls for an agreement with elements of the strategy which are in accordance with each other, for example each unit fitting in; and with the present and predictable future circumstances. Further, Scholz (1987) argues that the strength of an organisations culture has important influences on the culture-strategy fit. For example, strong organisational culture is important for the culture-strategy fit. Such strong culture is evidenced by the organisational ideologies, metaphors, analogies, stories or myths pointing in

the same direction and assisting by producing an implicit feeling of where the company should go.

Organisational culture also influences certain factors in an organisation such as the organisational structure, compensation system, control systems and value systems (Morgan, 1993). Other factors influenced by the organisational culture are the technology, industry structure, competitive characteristics, as well as the economic, social, and political institutions which are relevant to an organisation (Morgan, 1993). Culture has more influence in periods when employees change roles, when subcultures conflict, and when senior management makes and implement strategic decisions about the organisations direction and style (Morgan, 1993).

But organisational culture may also have some adverse effects on strategy. Although research suggest that organisational culture may be taken for granted when it is in harmony with the strategy of the organisation (e.g. Morgan, 1993), a strategic change which does not take the culture of the organisation into account is usually fraught with difficulties (Wilkins, 1983). Green (1988) emphasises that the dominant model of culture in relation to strategy views strategic change as being impeded through rigid behavioural patterns; these he described as the structural static perspective of culture (Green, 1988). These patterns are reinforced by strong social sanctions (for example, norms, rules, values, and collective mental programming) which constitute the normative glue of organisational culture (Green, 1988). The normative and prescriptive element of organisational culture may restrict acceptable ways of doing things (Green, 1988). This is so because once culture is established, it may become resistant to an organisations environment and to its strategy (Green, 1988). Culture is buried in habits and behaviours as such it may resist change and frustrate strategy formulation and implementation (Green, 1988). Therefore, "*the most brilliant strategy is*

worse than useless if it cannot be implemented because it is socially unacceptable" (Green, 1988: 123).

2.7. The Influence of Organisational Culture on Managerial Behaviours

Most studies on organisational culture and management acknowledge the importance of leadership in creating, sustaining and managing the culture of an organisation. For example, some scholars suggest that organisational culture is particularly influenced by leadership behaviours and management styles (e.g. Kotter and Heskett, 1992; Schein, 1985). Supporting this assertion, evidence can be found in the research of Pettigrew (1979) who believes that this influence is mostly in newly created organisations where a founder influences the culture through his own ambition and interaction with organisational members. The assertion of the above scholars is consistent with other scholars who believe that organisational culture should be treated as a variable which is subject to managerial manipulation and control (e.g. Morgan, 1993; Wilkinson et al., 1996). Chatman and Cha (2003) also suggest that it is necessary that organisational leaders cultivate the cultures of their organisations because employees across all levels in organisations are vigilant to behaviours of the leaders even in some less important issues like what they spend their time on, what goes on their calendar, what they ask and fail to ask and follow up on and what they choose to celebrate. These scholars further suggests that the behaviours of organisational leaders influence other employees and provide them with what counts and which of their own behaviours are likely to be rewarded and punished. These behaviours of leaders convey much more to employees about priorities than do printed vision statements and formal policies or ideologies (Chatman and Cha, 2003). As an example, the study of Schwartz and Davis (1981) documents that the behaviours of top management which is a reflection of their personal ideologies, philosophies of management and their style of leadership which is evident in how they spend their time

and about the choices they make influence other employees behaviours and influence the creation of the organisations culture.

Conversely, Schwartz and Davis (1981) suggest that four components of an organisation (structure, systems, people and culture) may determine important managerial behaviours. These four components have major influences on how managerial tasks are achieved and management relationships formed. They argue that managers have more degree of control over structures, systems and peoples skills, but the degree of control which they have in comparison over culture is very limited. Other scholars such as Ogbonna and Harris (1998) and Smircich (1983) argue that culture is something which an organisation is, as against something which it has (i.e. the phenomenon 'organisation' itself is 'culture'). As clarified earlier, this is the perspective taken in this thesis.

Earlier, in section 2.5.1 and 2.5.2, it was established that organisational culture consists of some combinations of artefacts (practices, expressive symbols, or forms), values and beliefs, and underlying assumptions that organisational members share about appropriate behaviours (e.g. Schein, 1985) and which stabilises and normalises events around an organisation thereby making day-to-day functioning possible (e.g. Schein, 1991). Therefore, *"shared significant meanings affect how managers collectively interpret their roles, the nature of the business, competitors' actions, strategic data and required strategic action, and so on. These meanings are in the first instance created by interacting individuals. Yet once established, they are only sustained and experienced by later generations by reaffirmation in everyday actions"* (Green, 1988: 125). From the above, it is suggested that the culture of an organisation is immediately reflected in the attitude and values, as well as in the management style and in the problem solving behaviour of organisational members (e.g. Schwartz and Davis, 1981).

Culture is a powerful force in explaining the behaviours of individuals and groups within organisations (Barney, 1986). It guides behaviours and help employees achieve their daily routines much better by creating informal rules which spells out how they are expected to behave (Deninson, 1990). Organisational culture plays subtle, pervasive and important roles in organisational life and has important and powerful implications on managerial behaviour (Sathe, 1983; Schwartz and Davis, 1981). It provides a guide for the conduct of acceptable behaviours within an organisation (Wilson, 2001). Some aspects of culture are entrenched in rules and laws, for example rules against stealing which may be supported by official punishments, or social norms such as what kinds of cloth to wear which are also backed by social disapproval and rejection for deviations (Wilson, 2001). Shared philosophies, assumptions, values, expectations, attitudes and norms bind an organisation together. *"These set of integrated concepts becomes the manner or strategies through which an organisation achieves its specific goals as such it can be postulated that an organisation's collective culture influences both the attitudes and subsequent behaviours of its employees"* (Marcoulides and Heck, 1993: 211).

Organisational culture seen as shared values and beliefs fulfil numerous important functions such as conveying a sense of identity for organisational members (Deal and Kennedy, 1982; Peters and Waterman, 1982). Organisational identity can be described as an expression of the organisational culture. It represents the perceptions of organisational insiders and it is a collective held frame within which organisational members make sense of their world (e.g. Scott and Lane, 2000) thus influencing behaviours and strategies. Albert and Whetten (1985) suggest that organisational identity can be understood as those elements of an organisation which the members perceive as central, distinctive, and enduring. Corley (2004) suggests that employees in higher levels in organisations may see the organisational identity differently from how it is perceived by those in the lower hierarchy. While those in higher levels see it in

relation to the organisations strategy, those in lower hierarchy see it in relation to the organisation's culture. Just as research suggests that there is the possibility for multiple subcultures to exist within an organisation, research also suggests that it is possible for multiple organisational identities to exist within an organisation (e.g. Corley, 2004).

Smircich (1983) and Meyer (1981) suggest that culture assist in facilitating the generation of commitment to something larger than the self, enhancing social system stability and serves as a sense-making device that can guide and shape behaviour. Other researchers such as Gordon and DiTomaso (1992) suggest that the widespread agreement about basic assumptions and values across an organisation should increase behavioural consistency. Values represent preferences for more ultimate end states; for example, striving to be the number one, or avoiding debt at all costs (Sathe, 1983). Shared beliefs and expectations by organisational members produce powerful norms that assist in shaping the behaviours of individuals and groups within organisations (Schwartz and Davis, 1981). Sathe (1983) describes norms as standards of expected behaviours, speech, and presentation of self. Other scholars (e.g. Bettenhausen and Murnighan, 1991) describe norms as commonly considered legitimate socially shared guidelines to accepted and expected behaviours. They are powerful forms of control and fundamental to managerial behaviours. Norms are standards against which employees can evaluate the appropriateness of behaviour. They provide order and meaning to what may be seen as an ambiguous, uncertain, or even threatening situation (Bettenhausen and Murnighan, 1991). They don't have to be explicitly recognised or discussed to wield considerable behavioural force within an organisation. Some examples of norms include being on time, disagreeing politely or dressing conservatively. Schwartz and Davis (1981) suggest that organisational culture viewed as norms may characterise an organisation and serve as normative order for management and employees. The culture of an organisation defines the normative order which serves as a source of consistent behaviour across

individuals within an organisation (Sorensen, 2002); these norms may be adopted in solving problems (Marcoulides and Heck, 1993). Further examples of norms includes the encouragement of competition and the punishment for failure to compete in Pepsico, excellent service at IBM, and the innovation central to 3M (O'Reilly, 1989).

Norms are distinct from rules which are formal and codified directives; they assist with facilitating social control by acting as positive or negative means of ensuring conformity and applying sanctions to deviant behaviour (Chatman and Cha, 2003). These norms, if strongly shared, usually increase managers' clarity about priorities and expectations as well as their bonds with other employees (Chatman and Cha, 2003). In most organisations, members who violate these norms are pressured to conforming, they may be ostracised unless the cultural norms change to accommodate members who deviate from them (Schwartz and Davis, 1981). But norms and values have some differences. A major difference is that norms are more tactical and procedural that are values, but both of them have an ought to implicit in them and they both influence managerial actions and behaviours (Sathe, 1983).

Furthermore, just like organisational culture has positive and adverse effects on strategy, it may also have positive influences on certain managerial behaviours and adverse influences on others. Harrison and Corley (2011) suggest that organisational culture represents a specific toolkit of resources which can be used to solve problems and navigate organisational life, but Bate (1984) emphasises that some cultural orientations can impede problem solving behaviours. Culture influences the quality and type of interpersonal relationships within an organisation and affects approaches to joint problem solving processes (Bate, 1984). Once shared cultural meanings are established, they influence organisational members' dominant relational orientation to work and to their colleagues (Bate, 1984).

Moreover, current research appears to suggest that organisational culture has powerful influences on managerial behaviour and organisational life because shared beliefs, norms, and values represent assumptions and carefully selected preferences that guide such behaviours (Sathe, 1983). These shared beliefs, norms and values represent important common assumptions that guide organisational thinking and action. This influence is so delicate and difficult to analyse or describe because most of the assumptions are taken for granted and people are not usually aware of them (Sathe, 1983). As an example, organisations like IBM have a 'thick' culture with numerous beliefs and values which are deeply held. Some of these include respect for individuals, encouragement of constructive rebellion, and an emphasis on doing what is right (Sathe, 1983). Once these beliefs, norms, and values are taken for granted without being violated or challenged, they begin to shape behaviour and have profound influences on the routinized activities of managers (Sathe, 1983).

Sathe (1983) examined five basic processes in which culture influences managerial behaviours. These processes which lie at the heart of most organisations include communication, cooperation, commitment, decision making, and implementation. These five processes and how organisational culture influences them are explained briefly below.

Communication: Culture reduces the dangers of miscommunications because issues about which organisational members have shared beliefs and values need no communication (i.e. certain things go without a saying). It facilitates guidelines and cues which help receivers in interpreting messages. "*The beliefs and values about what to communicate, and how openly to communicate, are crucial. In some organisations, the culture values open communications ("bad news is bad, but withholding it is worse"). In others, it doesn't. Withholding of*

information beyond that specifically asked for, secrecy, and outright distortion may prevail" (Sathe, 1983: 10).

Cooperation: Organisational culture can influence managerial cooperation within an organisation. The degree of true cooperation is usually influenced by shared beliefs and values and it is impossible to 'legislate' true cooperation. It is possible for management to resort to carefully worded employment contracts, spelling out of detailed expectations from employees and devising clever, complicated incentive schemes which reward just the right behaviour. But such procedures, however properly planned, cannot anticipate all the eventualities that may conceivably arise. True cooperation will usually have a positive influence on managerial behaviours.

Commitment: The shared beliefs and values which characterises organisational culture assist in generating identification and attachment by management. Organisational members most often feel a sense of commitment to an organisation's objectives in situations where they identify with those objectives and are attached to them. The sense of commitment of managers automatically influences their decision making and ability to evaluate alternatives.

Decision Making: Organisational culture influences the decision-making process because beliefs and values that are shared within an organisation give managers a consistent set of basic assumptions and preferences. The outcome of this is a more efficient decision-making process, because there are fewer disagreements about which premises should prevail.

Implementation: Organisational culture is a compass that helps point organisational members in the right direction. As an example, in a scenario where an immediate action is needed in a more or less ambiguous situation, and where it is not possible to check with others concerning the appropriate response, the culture of an organisation can serve as a guide.

Therefore, it is suggested that *"culture provides such "guiding principles" that employees can rely on when close calls are to be made without consultation"* (Sathe, 1983: 12).

Equally important, research suggests that organisational culture may be thought of as a potential social control system which influences managerial actions (O'Reilly, 1989). Organisational culture, described as a social control mechanism assists in framing interpretation of events and assumptions about processes across organisations (O'Reilly and Chatman, 1996). "*Unlike formal control systems that typically assess outcomes or behaviours only intermittently, social control systems can be much more finely tuned. When we care about those with whom we work and have a common set of expectations, we are "under control" whenever we are in their presence"* (O'Reilly, 1989: 12). These social control systems make efficiency and effectiveness achievable in organisations and little will get done without them being in place. This social glue (systems) binds an organisation because the shared conceptions held by organisational members act in a normative fashion to guide behaviours (Detert et al. 2000). Even if the above definition of control system is broad, it encompasses the traditional control systems which range from planning and budgeting to performance appraisals. These control systems are in force when those being monitored are aware that an important person (e.g. a boss, or a fellow staff) is paying attention and will likely object when routines are not going according to plans (O'Reilly, 1989). Thus, these social control systems often breed a feeling of great autonomy; this is against formal control systems where employees have a sense of external constraint which is usually binding and unsatisfying.

In summary, the culture of an organisation has important influences on the strategy and behaviours of organisational members and specifically on managers.

2.8 The Second Wave of Cultural Analysis

Section 2.5, 2.6 and 2.7 captures the *'first wave'* of organisational culture analysis. The *'first wave'* of cultural approaches to organisations is similar to a broader cultural turn in the social sciences in the 1980s which sparked research on collective meaning systems at the level of groups, organisations, industries or countries (Weber and Dacin, 2011). Organisational researchers in the 1980s were built on ideas from cultural anthropology, social psychology and social constructionist sociology. The focus of these researches was an examination and theoretical development of processes and structures at the collective level of analysis (Weber and Dacin, 2011). In spite of their different lineage, most early organisational research emphasised cultural persistence and coherence (as presented in section 2.5, 2.6 and 2.7). Culture as a concept was associated with fairly stable, encompassing and often internalised constraints on individual thought and action (Weber and Dacin, 2011).

But cultural approaches to organisations have experienced resurgence in recent years. Scholars have become less interested in models of culture as a constraint either internalised by individuals or imposed on them by members of their immediate social group (Weber and Dacin, 2011). Weber and Dacin (2011) describe this resurgent interest in the cultural construction of organisational life as a *'second wave'* of cultural analysis. This *'second wave'* of cultural research examines how individuals and organisations access and deploy different cultural materials. Scholars in this *'second wave'* of cultural research less frequently use terms to do with control and stable aspects of culture such as structure, code and system; in its place they turn their attention to conceptions concerning change and the use of culture in a more agentic way, therefore use terms such as practice, identity, strategy, change and resources (Weber and Dacin, 2011).

The importance of the seminal work of Swidler (1986) on culture in action cannot be over-looked. Swidler (1986) outlined the failures of cultural explanations based on values and offered an alternative model to the traditional models of culture. She suggests that the traditional models in the *'first wave'* used to understand culture's effect on action is profoundly misleading because it assumes that culture shapes action by supplying ultimate ends or values towards which action is directed as such making values the central causal element of culture. She argued for a superior intuitive plausible alternative and asks: "*if values have little explanatory power, why expect culture to play any causal role in human action? Why not explain action as the result of interests and structural constraints, with only a rational, interest-maximising actor to link the two?" (p. 276).* Swidler advocated that culture influences action not by providing the ultimate values towards which action is oriented, but influences it by shaping a repertoire or toolkit of habits, skills and styles from which people construct strategies of action. Similarly, other scholars (e.g. Weber, 2005) suggests that culture influences action through more than values that provide the ends of action; it supplies actors with the means (the tools) for solving practical problems and for navigating the environment. Weber describes this as the ''supply-side'' of culture which shifts focus away from values and choices to cultural resources, habits, skills and styles. The idea of ''cultural toolkit'' or ''cultural repertoire'' infers that cultural resources can be recognised as discrete and somehow stable elements (Weber, 2005). Weber (2005: 232) suggest that *"cultural repertoires are made up of concrete symbolic resources that are organised into recognisable sets, this leaves out ''non-cultural'' resources, such as purely individual-subjective and unarticulated experiences and imaginations."* Even scholars in communication studies have also suggested that treating culture as a causal variable inappropriately advocates a view of it as a "thing" that exists independent of and apart from people (e.g. Eisenberg and Riley, 2001).

Building on Swidler (1986)'s notion of the cultural toolkit, Leonardi (2011) also argues in favour of treating culture as a set of resources which individuals can draw on to enable their everyday actions. Leonardi (2011) in his work which was explored through a qualitative study of computer simulation software in a major automotive engineering firm drew on the research on organisational cultural toolkits to construct a framework which suggests that technology concepts frame cultural resources. These cultural resources are subsequently used in the construction of the very problems which the technology artefacts will be built to solve. He advocated that culture does not directly shape technological artefacts, instead, a technology concept activates culture as it draws frames around resources that will guide people's problem construction practices. Other scholars such as Rindova et al. (2011), motivated by the growing influence in cultural sociology and organisational research of the view of culture as a toolkit, investigated if and how organisations use new and differing cultural resources. Their research involved the historic analysis of the incorporation of new cultural resources in the cultural register of an Italian manufacturer of household products Alessi. They found that cultural repertoire enrichment and organisational identity redefinition are two main mechanisms which facilitates the process of creating and using new cultural resources. Rindova et al.'s (2011) study extends Swidler's (1986, 2001) notion about the use of cultural toolkit from the individual to the organisational level of analysis, highlighting processes which are distinctive to organisations. They suggest that the perspective of culture as a toolkit holds considerable promise for understanding strategic action and change at the organisational level of analysis. Correspondingly, in their research, Jones and Tarandach (2008) sought to understand the keywords available in the cultural register of the architectural profession as well as how practicing architect firms deployed the words and vocabularies available to them from the cultural toolkit when they framed their competencies and motives for clients.

Moreover, all real cultures contain different, often conflicting symbols, rituals, stories, and guides to action. The reader of the bible can find passages to justify any act; likewise, traditional wisdom comes in paired adages, and counselling in opposite behaviours (Swidler, 1986). People may have in readiness cultural capacities they rarely employ, and all people know more culture than they use (Swidler, 1986, 2001). Leonardi (2011: 348) further explains this; he puts forward that "*imagine multiple actors who all have access to the same store of cultural tools. A specific job requires only some of the available tools in the store, not all of them. Actors assemble specific toolkits for the job at hand from the multitude of cultural tools available in the store…"* This suggests that culture is neither ubiquitous nor unilateral, but made manifest in a combination of resources which can be employed differentially in unique situations and circumstances. On the same note, Swidler (2002: 2) asserted that "*like a library that holds many more books than any one person could ever read, a ''culture'' sustains an array of resources that people can draw in different ways.''* Besides, Swidler (2001) suggests that some elements of culture are contradictory; as such not all parts of culture are consistent with each other and individuals deploy those that are useful at particular moments. Their arguments in essence, is that a culture is not a unified system that pushes action in a consistent direction; instead, it is more like a toolkit or repertoire from which actors can select differing pieces for constructing lines of action.

Weber (2005) argued that actors only have at hand a bounded set of diverse resources which can be used to solve the different problems of everyday life within the organisation, and distinctive toolkits can be associated with particular actors. These cultural resources can be analysed at the level of the repertoire, i.e., the entirety of cultural material at the disposal of individual actors or collectives, and there is no presumption that actors' toolkits are necessarily internally coherent or systematic (Weber, 2005). Therefore, individual actors may

use different resources without necessarily being worried about the apparent inconsistencies and contradictions.

Swidler (1986) described culture as such symbolic vehicles of meaning, which includes beliefs, ritual practices, art forms, and ceremonies, as well as informal cultural practices such as language, gossip, stories, and rituals of daily life. Swidler's (1986) alternative analysis of culture consists of three steps:

1. Firstly, it offers an image of culture as a toolkit of symbols, stories, rituals, and world-views, which organisational members may use in varying configurations to solve different kinds of problems.
2. On a second note, it analyses culture's causal effects, focusing on strategies of action, persistent ways of ordering action through time.
3. Lastly, it sees culture's casual significance not in defining ends of action, but in providing cultural components that are used to construct strategies of action.

Equally important, research suggests that the social and cultural context within an organisation plays important roles in shaping individual and collective actors' toolkits, as such, an organisations repertoire-in-use is of course not only due to individual factors (e.g. Weber, 2005). Weber conceptually clarified the relation between toolkits of individual actors and the broader set of cultural resources at the field level. This is due to the embeddedness of cultural repertoires in the organisation of larger fields. He describes toolkits as subsets of the cultural registers. In his paper, Weber (2005) used the term cultural register to describe the set of cultural elements at the collective level of the field, and reserved the terms cultural toolkit and cultural repertoire for cultural resources at the actor-level. Weber (2005) argued that the very notion of ‘‘*toolkit*’’ or ‘‘*repertoire*’’ implies that cultural resources can be

recognised as discrete and somehow stable elements. In essence, cultural toolkits can be articulated. They are made up of concrete symbolic resources that are organised into recognisable sets. This leaves out non-cultural resources, for example purely individual subjective and unarticulated experiences and imaginations. Only a limited number of cultural resources are used by actors routinely, this is because new resources have to be learned and practiced before they can be used correctly. This implies that cultural resources which are candidates for adoption by an actor competes with the existing toolkit elements.

As highlighted earlier, culture is now more often treated as constitutive of a wide range of social processes rather than a regulative that works against other forces; this change began in the late 1980s and 1990s, thus, the past 30 years has witnessed general ebbs and flows of cultural research as well as a reconceptualization of culture itself (Weber and Dacin, 2001). Weber and Dacin (2011: 287) suggest that *"the growing emphasis on cultural construction has produced a more expansive research agenda, where culture serves as a broad theoretical and methodological lens rather than a distinct object of study. Many core processes in organisations and markets, from the competitive rivalry in markets to the practice of strategy making and individuals' role behaviour, can be understood from a cultural perspective."* It must be noted that none of these ideas were completely absent in earlier cultural research, but they have become a more central focus of research in recent years.

In summary, the *'first wave'* of cultural analysis (as described in section 2.5, 2.6 and 2.7) perceives organisational culture as homogeneous while the *'second wave'* views it from a heterogeneous perspective. Under the '*second wave'* analysis, organisational culture is not seen as directly influencing the behaviours of organisational members, specifically managers. Culture here is conceptualised as a toolkit of resources from which individuals can pick and choose from to enable their behaviours and actions. In other words, culture influences actions

or behaviours not by providing the ultimate values towards which action is oriented, but influences it by shaping a repertoire of habits and styles from which people construct strategies of action. In the next section, different managerial roles and behaviours which have been discussed in the strategy process research will be presented. These identified managerial roles and behaviours will be considered in light of organisational culture.

2.9 Managerial Roles and Behaviours

Managerial roles in organisations are of immerse importance since managerial behaviours affect organisational performance (Chakravarthy and Daz, 1992). Friedman and Podolny (1992) and Katz and Kahn (1978) describes a role is described as a set of actions that are expected of individuals in a certain context. Organisational roles involve processing information and taking actions that facilitate organisational change (Mintzberg, 1973; Kiesler and Sproull, 1982). These roles are usually associated with positions and job specifications that reflect certain expectations as regards the roles contribution to organisational tasks and objectives (Merton, 1957). In most organisations, these operational roles form a position's primary role set (Floyd and Lane, 2000). *"Organisational positions also have secondary roles: sets of behaviours that support the organisation's objectives but that are less closely linked to the day-to-day operational functions of a position. Unlike primary role sets, secondary role sets are often neither explicitly defined nor overtly expected*" (Floyd and Lane, 2000: 158).

From the strategy process research, some strategic roles played by each level of management in organisations are identified and summarised by Floyd and Lane (2000). Other strategic roles exist, but the roles identified provide a grounded account of the managerial activities which are most salient. There is considerable overlap in the roles of each management levels; but for each level, the type of information processed and the type of behaviour expected is

usually different (Floyd and Lane, 2000). Also, the definition of senior and middle management varies across organisational settings (Dutton and Ashford, 1993; Floyd and Wooldridge, 1992; Floyd and Lane, 2000). The senior management's primary strategic role is strategy formulation, while the middle managements primary role is strategy implementation; but, middle management is involved in strategy formulation while senior management is involved with strategy implementation (Raes et al., 2011). Floyd and Lane (2000) identifies ratifying, recognising and directing as top management roles. Championing, synthesizing, facilitating and implementing as middle management roles, and experimenting, adjusting and conforming as operating management roles. Importantly, middle managers are active participants in the 'thinking' and 'doing' of strategy in organisations (Currie and Procter, 2005). They are in charge of executing strategy created by senior management in practice, and strategy implementation, facilitation and support are key aspect of middle management role in organisations. Middle management roles as described by Floyd and Lane (2000) are presented in table 4 below.

Middle Management Roles	Behaviours	Documenting Studies
Championing	Nurture and advocate	Bower (1970)
	Champion	Burgleman (1983a, b; 1991)
	Present alternatives to top management	Wooldridge & Floyd (1990)
Synthesizing	Categorize issues	Dutton & Jackson (1983)
	Sell issues to top management	Dutton & Ashford (1983)
	Blend strategic and hands-on information	Nonaka (1988)
	Synthesize	Floyd & Wooldridge (1992)
Facilitating	Nourish adaptability and shelter activity	Bower (1970)
	Share information	Mintzberg (1978)
	Guide adaptation	Chakravarthy (1982)
	Facilitate learning	Chakravarthy (1982)
Implementing	Implement	Schendel & Hofer (1979)
	Revise and adjust	Nutt (1987)
	Motivate and inspire; coach	Hart (1992); Quinn (1980)

Table 4: The strategic roles of middle managers (adapted from Floyd and Lane, 2000).

Importantly, despite the significant increase in research on how management influences organisational ambidexterity, there are still considerable uncertainties regarding their contribution (Simsek et al., 2009). Specifically, there is a shortage of research which focuses on how middle managers can orchestrate an ambidextrous strategy. The research on ambidexterity has mainly focused on how senior managers or top management teams orchestrate ambidexterity. For example, Smith and Tushman (2005) considers senior managements paradoxical cognition while Jansen et al (2008) considers top management

team's transformational leadership and how these may allow organisations realise ambidexterity. Thus, in this section, the literature review focuses on middle management roles and behaviours.

2.9.1 The Roles of Middle Managers

"Conceptually, middle management can be defined as the coordination of an organisational unit's day to-day activities with the activities of vertically related groups" (Floyd and Wooldridge, 1992: 154). Current research suggest that middle management operates directly below senior management and directly above operating management (e.g. Floyd and Lane, 2000). They are described as organisational linking pins that offers support for senior management strategies as well as coordinate operating management (Raes et al., 2011; Floyd and Wooldridge, 1992).

Current research suggests that performance of strategic activities by middle managers remains paramount for success of organisations (Floyd and Wooldridge, 1992, 1994, 1997). Currie and Procter (2005) and Floyd and Lane (2000) suggest that they are positioned as key strategic actors), and rather than at the top of organisations, what happens at the middle influences organisational performance (Currie and Procter, 2005). For example, it is established that *"....organisational performance appears to be associated with consistent levels of middle management influence in the implementation of strategy"* (Floyd and Woodridge, 1997:472).

Mantere (2008) suggest that many results showing that middle managers can be the drivers of organisational strategy have been published. They have been described as essential drivers of strategic renewal in organisations (Burgelman, 1984). Middle managers are in charge of achieving plans set out by senior management (Dutton and Ashford, 1993). They also fulfil the broadest range of strategic roles and are central to organisational learning, as well as

important in strategy definition and execution (Floyd and Woodridge, 1997). Further evidence from current research, for example Bower (1970) and Floyd and Wooldridge (1997) suggest that they contribute importantly to strategy in organisations and contribute to organisational competencies by aligning and integrating activities (Sayles, 1993). Middle managers are responsible for providing momentum for new ideas which influences strategy in organisations (Floyd and Wooldridge, 1992); thus, their influence extends beyond strategy implementation.

Moreover, extant research on middle management captures their roles in strategic management of organisations. For example, the typology of middle management involvement in strategy created by Floyd and Wooldridge (1992, 1997) identifies championing alternatives, synthesising information, facilitating adaptability and implementing deliberate strategy as four important roles of middle management. Their research seems to suggest that middle managers simultaneously take actions that have upward and downward influences on strategy formation. For example, *"championing alternatives and synthesising information represent upward forms of involvement, while facilitating adaptability and implementing deliberate strategy are downward forms" (*Floyd and Wooldridge, 1992: *154).* The upward influence affects senior management's view of organisational circumstances while the downward influence affects the alignment of organisational arrangements with the strategic context.

Floyd and Wooldridge's (1992) typology of middle management involvement in strategy also identifies divergent and integrative distinctions. Firstly, they argue that strategy is a change process which requires divergent ideas which may alter the organisations strategy (if acted upon); as such classifying championing alternatives and facilitating adaptability as middle management divergent roles. Currie (1999) and Pappas and Wooldridge (2007) suggest that

divergent actions developed through an organisation social structure is critically important for long term success of organisations. Secondly, they argue that strategy can also be described as an integrative pattern which requires ideas that coordinate activities which supports a coherent direction; as such classifying synthesising information and implementing deliberate strategy as middle management integrative roles. This typology is shown below.

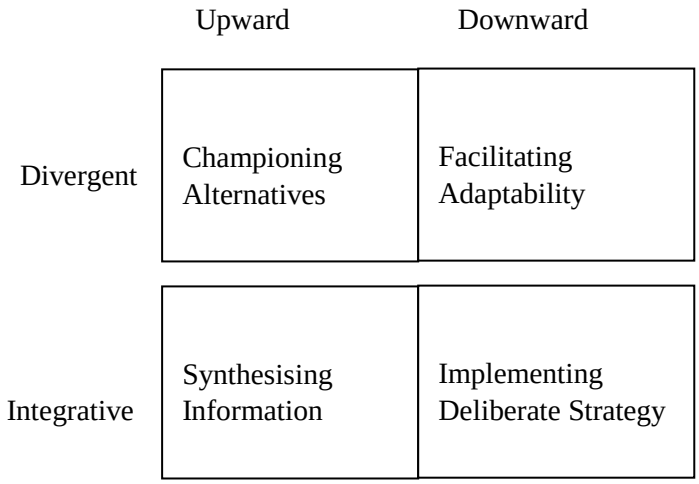


Figure 1: Typology of middle management involvement in strategy (Floyd and Wooldridge, 1992).

Building on the earlier typology, Floyd and Wooldridge (1997) established the roles of middle managers succinctly, identifying various activities which they engage in, such as:

- Championing Alternatives,
- Facilitating Adaptability,
- Implementing Deliberate Strategy,
- Synthesising Information

Consistent with Johnson et al. (2003) who recognise and emphasise that the study of the field of strategy has traditionally concentrated on the macro organisational level, this thesis attends much more to the micro-level phenomena and focuses on the detailed processes and practices which constitute the day-to-day activities of organisational life. Other middle management roles identified in extant literature, include ‘linking activities’ of middle managers described

by (Taylor and Helfat, 2009) as an integrative role, and 'boundary spanning' (Floyd and Wooldridge, 1997 and Hill and Birkinshaw, 2012) as a middle management divergent role. Taken collectively, these roles are now considered.

Implementing Deliberate Strategy: Research confirms that middle managements primary role in strategy is the implementation of top management's intention (e.g. Floyd and Wooldridge, 1992). Research also seems to validate the view that in the implementation of an ambidextrous design, execution appears to trump strategy (O'Reilly and Tushman, 2011). Implementing deliberate strategy is thus defined as the managerial interventions which align organisational action with strategic intentions (Floyd and Wooldridge, 1992; Currie, 1999). Strategy implementation is the most commonly recognised role of middle managers (Floyd and Wooldridge, 1994); and middle managers usually report significantly higher levels of activities for implementing deliberate strategy than for championing, facilitating or synthesising roles (Floyd and Wooldridge, 1992). This role of middle management involves them putting in place the necessary organisational structures, people, and systems needed for implementation (Floyd and Lane, 2000). The role involve activities which results in maintenance of the status quo thus ensuring stability by implementing senior management's deliberate strategy. Through this role, middle managers reinforce existing strategies and ensure return on investments on current assets (Miles and Snow, 1978; Nutt, 1987; Floyd and Wooldridge, 1997). This is also in a bid to control performance with respect to required outcomes.

It might be argued that strategy implementation and strategy formation are closely interrelated. Raes et al. (2011) argues that an effective collaboration between strategy formulation and strategy implementation is desirable; hence a need for senior management to support strategy implementation and middle managers to support senior managements

intents. Organisational strategies that lack support of middle managers may suffer setbacks and implementation of such strategies become enormous problems for such organisations (Floyd and Wooldridge, 1994).

As another example, in the case of the Irish Health Service described in Conway and Monks' (2011) research, senior management refused to adequately support activities of middle management; "*…while there were no integrated computer systems, senior managers were keen for statistical data that would indicate the way in which the changes were working. But the lack of integrated systems meant that such data was difficult for the middle managers to supply"* (p.196). Thus for middle managers to effective implement strategic plans, it is necessary for both middle managers and senior managers to sing from the same hymn sheet (i.e. be in agreement).

Synthesising Information: Synthesising information is defined as the interpretation and evaluation of information. *"This role of middle management is integrative in that it combines ambiguous and diverse data and interprets it within a given strategic context. Over time, however, these subjective interpretations may lay the groundwork for strategic change"* (Floyd and Wooldridge, 1992: 155). Middle managers gather, analyse, and synthesise information; this information serves as necessary before strategic change is championed, considered or implemented. The synthesis of information involves the supply of internal and external facts as well as the interpretation and evaluation of ambiguous and diverse information; and passing such across to senior management (Floyd and Wooldridge, 1992, 1994).

Middle managers are positioned to simultaneously combine existing strategy with hands-on information (Nonaka, 1988). Their role through evaluation, advice, and subjective interpretation affects how issues are interpreted in organisations (Floyd and Wooldridge,

1992). The middle management role of synthesising relevant and necessary information may be a precursor for subsequent ratification by the senior management (Floyd and Lane, 2000); and in the process of ratification, the suggestions generated by middle managers after information synthesis may be accepted and implemented, thus resulting in strategic renewal, or rejected by senior management.

Linking Activities: Middle management has important influences on organisations; part of these influences includes playing critical roles in forging and maintaining organisational linkages. Taylor and Helfat (2009) developed a conceptual framework which elucidates the important role of middle managers in building and leveraging these linkages across and within organisational units. They define organisational linkages as "*those that connect actors with different job responsibilities in an organisation, within or across units, through communication and coordination. Communication enables actors to obtain and share information; coordination enables actors to make aligned plans and decisions, and undertake consistent actions*" (Taylor and Helfat, 2009: 721). Their research emphasises that technological transitions are likely to fail in the absence of effective linkages between organisational units in which necessary assets reside, and that middle managers are critical to the success of these technological transitions due to their roles as organisational connectors.

Current literature on middle management also describes them as *linking pins*. For example, "*as linking pins, middle managers take actions that have both upward and downward influences on strategy formation"* (Floyd and Wooldridge, 1992: 154). Research has also established that *"middle managers perform a co-ordaining role where they mediate, negotiate, and interpret connections between the organizations institutional (strategic) and technical (operational) levels"* (Floyd and Wooldridge, 1997: 466). They link vertically related groups and connect the overall direction provided by top managers with the day-to-

day reality of lower-level managers. The linking activities fulfilled by middle managers give them the power to initiate, delay or sabotage new strategic initiatives (Raes et al. 2011). The role also gives them the power to support and accelerate strategy implementation or reduce the quality of implementation (Raes et al., 2011). Examples of middle management linking activities include actions such as making phone calls, writing emails and memos, participating in face-to-face discussions in formal and informal meetings, and transferring records and other documentation (Taylor and Helfat, 2009). Further examples include organising and implementing aligned actions among organisational actors (e.g. cross-functional training, joint planning, and decision making, such as for resource allocation and shared or coordinated deployment of resources) (Taylor and Helfat, 2009).

Facilitating Adaptability: Facilitating adaptability defined as fostering flexible organisational arrangements is a divergent role of middle managers. Burgelman (1983a) and Floyd and Wooldridge (1992) suggest that middle managers facilitate and stimulate organisational change by encouraging organisational members to sense change, relax regulations, and allowing behaviours that are divergent from planned strategy while allowing emergent approaches get underway. Through these divergent actions, middle managers develop new ideas and reshape organisational capabilities (Pappas and Wooldridge, 2007). They are in a position to facilitate these changes because of the complexity of information which they share. Burgeleman (1994), Nonaka (1991) and Floyd and Lane (2000) suggest that they serve as a hub through which most strategic information flows around organisations. This role involves aiding learning and nourishing adaptability by encouraging members to experiment with new approaches and adapt appropriately to changing conditions (Floyd and Wooldridge, 1992). They are best at encouraging emerging strategies resulting from organisational learning. Emergent strategies imply learning what works not as a result of chaos, but mostly, unintended order; frequently by this means, deliberate strategies are either changed or

adjusted (Mintzberg and Waters, 1985). Learning remains paramount in the process of creation of strategies in organisations (Floyd and Lane, 2000). When organisations experiment with a new strategy, there is need for internalisation of external information by management, and middle managers are fundamental to this.

Championing Alternatives: The middle management role of championing alternatives is defined as the persistent and persuasive communication of strategic options to upper management (Floyd and Wooldridge, 1992). Championing involves expressing confidence in processes, getting involved and motivating other employees to support innovation, and exhibiting persistence under adversity (Howell and Shea, 2001). Middle managements are regarded as organisational champions for initiatives which are developed by the operating management (Burgelman, 1983a; Floyd and Wooldridge, 1992). This role of middle management entails them influencing senior management to adjust current organisational strategies. Middle managers select projects, nurtures them, and when they prove successful, they sell them to senior management as new business initiatives which may change the existing business plan (Floyd and Wooldridge, 1992). They utilise their knowledge of customers, organisational capabilities, and senior management's intension while championing initiatives (Floyd and Woodridge, 1997). Through championing activities, middle managers seek experimentation, involvement, and participation in organisational activities by lower management (Floyd and Wooldridge, 1994). Middle managers search for new opportunities and proposed such to senior management while justifying it (Floyd and Wooldridge, 1994), in essence attracting top management's attention to and support for their ideas (Dutton et al. 1997). Research suggests that champions share a passion and are devoted to innovation (Howell and Shea, 2001). From the works of Floyd and Wooldridge (1994), Dutton et al., (1997), and Howell and Shea (2001), it is suggested that they can shape the direction of

strategic adaptation at the organisational level and promote organisational learning and evolution, while contributing positively to the organisational competitive position.

Boundary Spanning: Boundary spanning is a set of activities, processes and practices which has social influences within organisations, whereas boundary spanners are individuals who engage in boundary spanning. These social influences foster divergent activities, reshape capabilities, and are critical to an organisations long-term success (Pappas and Wooldridge, 2007). In some instances, boundary spanning roles are formalised into full-time positions, while in others they are only part-time activities. These roles usually vary from organisational context to context (Aldrich and Herker, 1977). Research suggest that individuals act as boundary spanners by facilitating information and coordination between groups thereby enabling communication and understanding to take place across differentiated knowledge domains (Aldrich and Herker, 1977). The available evidence from literature seems to emphasise the important boundary spanning roles played by middle managers, the potential of this role for strategic influence, and the significance in the analysis of middle management activity and contribution to strategy (Floyd and Wooldridge, 1997). Floyd and Wooldridge (1997: 477) points that *"middle managers in boundary-spanning positions report higher levels of both upward and downward forms of strategic influence than non-boundary-spanning managers, and the difference is greater for upward influence."*

Middle management boundary roles allow them to meditate between internal and external constituencies, and these roles are even greater in sub-units such as sales, marketing, and research and development units (Floyd and Wooldridge, 1997). Other boundary spanning units include human resource management and purchasing units (Pappas and Wooldridge, 2007).

Moreover, middle managers in boundary spanning roles are more strategically active than their non-boundary-spanning counterparts; this is due to their increased exposure to market and technical developments (Pappas and Wooldridge, 2007). *"These managers, who are in touch with the latest market and technical developments, are important to the process of strategic renewal"* (Floyd and Wooldridge, 1997: *481*). Research has also documented the importance of boundary spanning units. For example, Thompson (1967) emphasises that boundary spanning units play important roles between environmental uncertainty and internal organisational arrangements.

In summary, the literature review in this section reveals the important roles of middle managers across organisations. These roles may promote ambidexterity at the micro level, specifically in business units and teams.

2.9.2 Taxonomy of the Literature Review

The taxonomy of the literature captures the key themes identified from the review of literature. From the review of the ambidexterity literature, structural ambidexterity, contextual ambidexterity and managerial ambidexterity have been identified as the key themes. The idea behind structural ambidexterity is that exploration and exploitation can be achieved separately within an organisation (see Tushman and O'Reilly, 1996; Benner and Tushman, 2003; O'Reilly and Tushman, 2007). It should be noted that the focus of structural ambidexterity is at the organisational level. Also, the idea behind contextual ambidexterity is that alignment related and adaptability related activities can be pursued simultaneously at the business unit level (see Gibson and Birkinshaw, 2004). While the works of Mom et al. (2007, 2009) focus on ambidexterity at the managerial level. They postulate that, managers can engage in exploitation and exploratory related activities within a period of time and can indeed be ambidextrous. These scholars identify hosting contractions, multitasking, and

knowledge and skills renewal as core characteristics of ambidextrous managers. This thesis focuses on the managerial level.

Further, from the review of the literature on organisational culture, two key themes emerged. These themes include studies which focuses on the first wave of cultural analysis and studies which focuses on the second wave of cultural analysis. In spite of the different lineage under the first wave of cultural analysis, most of the scholars emphasises cultural persistence and coherence (see section 2.5, 2.6 and 2.7). Weber and Dacin (2011) suggest that culture (under the first wave of analysis) was associated with encompassing and often internalised constraints on individual thought and action. While the second wave of analysis focuses on how individuals and organisations access and deploy diverse cultural materials as seen in the works of Leonardi, 2011; Rindova et al., 2011. This thesis identifies a lack of succinct research on the second wave of cultural analysis.

The extant research on middle management contribution to strategy in organisations has largely pointed towards the same direction. Scholars collectively recognise the important roles which middle managers play in implementing strategic plans and inspiring change through championing ideas across organisations (see Floyd and Lane, 2000; Currie and Procter, 2005). Although the importance of middle managers in orchestrating ambidexterity has been identified (see Taylor and Helfat, 2009), more works is needed to understand how they orchestrate ambidextrous strategies.

To summarise, the literature on organisational ambidexterity, organisational culture, and middle management's contribution to strategy reveals the important scholarly effort which has gone into these bodies of literatures. Figure 2 below shows the taxonomy of the literature reviewed in this thesis. In the next section, the gaps in the literature are discussed and the conceptual framework formulated.

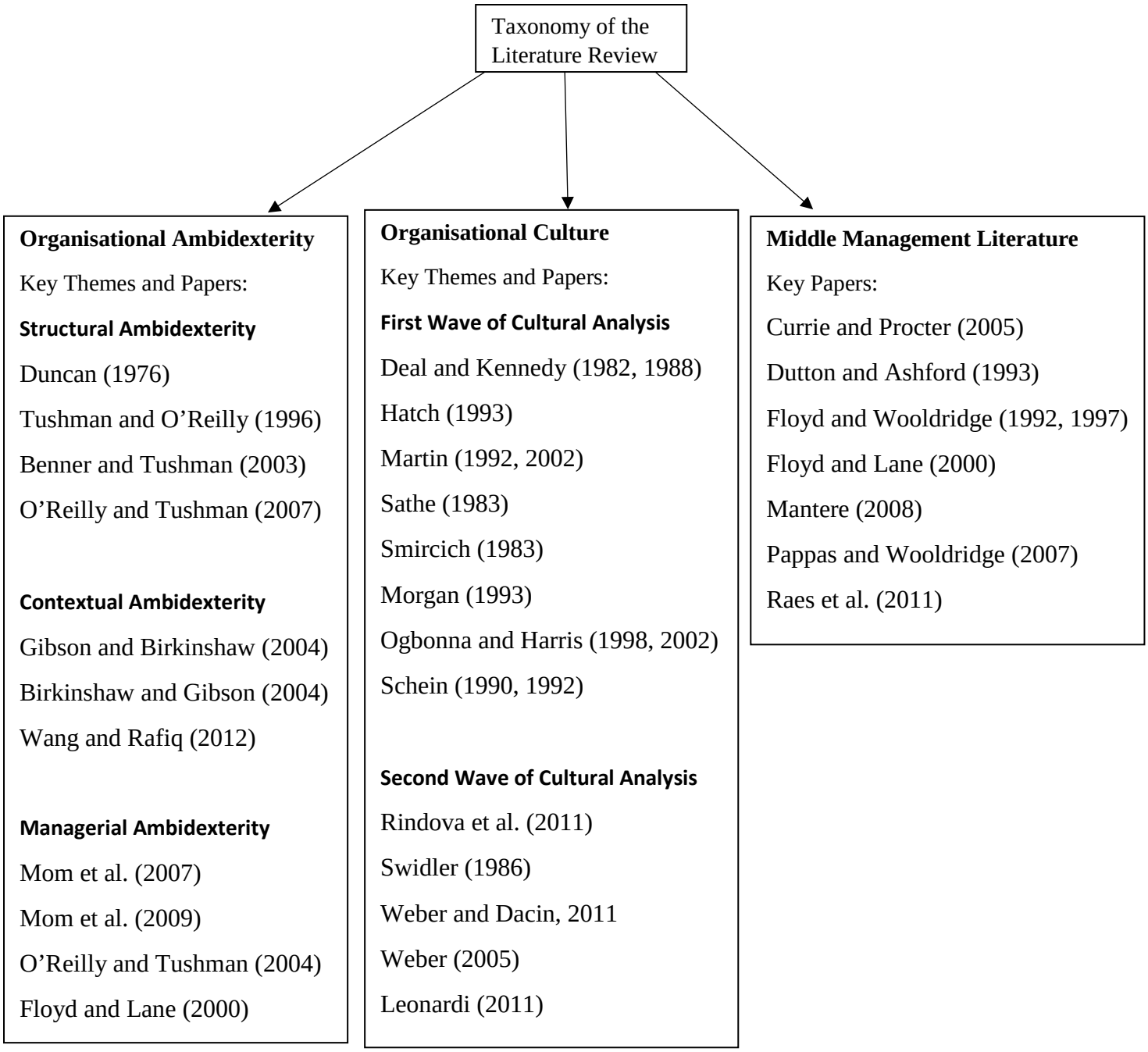


Figure 2: Taxonomy of the Literature Review.

2.10 Research Gaps

The challenge of organisational ambidexterity is a crucial one for scholars and managers alike, though the literature has expanded over the years, it remains largely under-theorised, under-conceptualised and therefore has remained a poorly understood phenomenon (see Simsek, 2009). Though there is general agreement that fostering ambidexterity can be beneficial in terms of financial performance as asserted in the works of Lubatkin et al.

(2006), Gupta et al. (2006), Raisch et al. (2009) and Nosella et al. (2012), there is a lack of consensus over what ambidexterity actually means and how it can best be achieved in organisations. The processes, systems and structures that facilitate organisational ambidexterity are different for each organisational structure, demonstrating the complexity of the ambidexterity-performance relationship (Turner et al., 2012). The need for the study of organisational ambidexterity is evident and there are still gaps in understanding how it is actually managed in organisations.

Current research suggests that there is a need for scholars to look critically at what tensions organisations try to resolve and how organisational routines make it possible to develop the capability needed for resolving such tensions (O'Reilly and Tushman, 2011). There is convincing evidence which supports that organisations should seek a balance between exploration and exploitation (e.g. March, 1991; Andropoulos and Lewis, 2009; Turner et al., 2012), but there is no overreaching research that explains how this balance may be achieved. Also, there is an agreed consensus that ambidextrous organisations usually succeed both in incremental and discontinuous innovation (e.g. March, 1991). However, there remains a scarcity of empirical study and evidence as regards how managers assist to align the structures and culture of their organisations towards the realisation of ambidexterity (Durisin and Todorova, 2012).

Since most organisations are faced with pressures of exploring and exploiting, Mom et al. (2007) calls for more investigation of managers' exploration and exploitation activities. Although their findings offer fresh insights to ambidexterity at the manager level of analysis, this area of research needs further study. This is because of the important and beneficial roles that managers play in organisations (see Mantere, 2008). Other scholars, for example Gupta et al. (2006) and Raisch and Birkinshaw (2008) have suggested that investigating

ambidexterity at the managerial level of analysis is a promising direction for future research. More studies are needed because ambidexterity is not yet fully established as an explicit managerial strategy. Even though the role of managers and management teams has been studied, very little has been demonstrated regarding how managers may actually orchestrate exploitation and exploration (Turner et al. 2012). What is missing is a clear articulation of the specific management actions which may facilitate the simultaneous pursuit of exploration and exploitation (O'Reilly and Tushman 2011). "*While the evidence for the benefits of ambidexterity is accumulating, there exists a gap in understanding how ambidexterity is actually managed within organisations"* (O'Reilly and Tushman, 2011: 19). Therefore, there is a great need for studies and insights into how managers implement and orchestrate ambidextrous strategies. This would be of much use to operating managers who face tensions and challenges of exploiting and exploring. Turner et al. (2012) also suggest that there is, though, limited theorisation regarding individual managerial ambidexterity and what this means in practice. Nosella et al. (2012: 460) affirms that *"it is now time to investigate how ambidexterity really emerges from the context by looking at the internal working of specific routines, which could provide the micro-foundations and key mechanisms used by firms to resolve tensions"*.

Specifically, the middle management level has received less scholarly attention and insight in organisational ambidexterity research, with a few exceptions, for example those of Taylor and Helfat (2009) and Hodgkinson et al. (2014). There is a conspicuous gap in the literature about the pivotal role of middle management in a bid to foster ambidextrous strategies. Development of strategic initiatives which promotes ambidexterity may require strategic inputs from middle managers. This represents an important research gap in the ambidexterity discussion. Overlooking the important and beneficial roles played by middle managers (linking pins in organisations) in the ambidexterity discussion has made the research on

organisational ambidexterity incomplete, deficient, and inadequate. This is especially so at the business unit level and at the team level of analysis, with a need for more context sensitive studies of middle managers contribution to strategy (Currie and Procter, 2005).

Importantly, though few studies recognise the importance of organisational culture as a critical factor in the performance of organisations and its significance which transcends country, industry and firm size (e.g. Tushman and O'Reilly, 1996), there is a dearth of research which examines how organisational culture may influence the realisation of ambidexterity, particularly at the micro-level. Though Tushman and O'Reilly's (1996) study captures how organisational culture may influence structural ambidexterity and Wang and Rafiq's (2012) study captures elements of organisational culture which are enablers of contextual ambidexterity, it might be argued that there is insufficient empirical research on how organisational culture may impede or facilitate the realisation of organisational ambidexterity at the middle managerial level. Thus, further investigation is needed to understand how organisational culture influences middle managers orchestration of ambidexterity.

Even though organisations may have integrated, differentiated or fragmented cultures as suggested by Martin (1992), traditional managerial perspectives on organisational culture seems to portray it as an objective reality which is bound within organisations made up of consistent sets of attitudes and values as well as collections of shared meanings or patterns of shared basic assumptions which signifies structural stability and which influences thinking, actions and behaviours directly within an organisation (e.g. Schein, 1992). The perspective that values largely dictates or influences appropriate behaviours within an organisation has been at the fore front of organisational research over the last three decades (see Weber and Dacin, 2011). As an alternative, the culture as a toolkit perspective views culture as a toolkit

of resources which organisational members can use to navigate organisational life (e.g. Swidler, 1986). Therefore, it is possible that middle managers can use specific cultural tools or resources within the organisation to enable their behaviours during the orchestration of ambidexterity. This thesis is thus motivated by the growing influence in organisational research on the perspective of culture as a toolkit of resources from which individuals and collectives can draw on to develop strategies of action which addresses different situations.

Therefore, the aim of this thesis is to examine how culture might influence mid-level managerial behaviours for the orchestration of ambidexterity.

2.10.1 Conceptual Framework

Based on the review of literature presented and the gaps identified, it is evident that the role of middle managers in facilitating organisational ambidexterity is underdeveloped. This thesis seeks to increase the understanding of the research on organisational ambidexterity by investigating the '*how'* of ambidexterity through a critical review of middle management actions and behaviours, how these behaviours are influenced by cultural resources, and its implications for organisations.

Therefore, a conceptual framework which holds together distinct phenomenon significant to the research has been created (see figure 3). The conceptual framework is an abstract representation and reflection of the literature, gaps identified, and of the researcher's intent and motivation for data collection. The framework is also connected to the objective of the research and will direct the collection and analysis of the research data. The concentric circles illustrate the multi-level nature of the thesis and where the research gaps lie. Based on the conceptual framework, culture is the driving force behind the behaviours of middle managers. In other words, the framework depict organisational culture as a 'toolkit' of cultural resources that middle managers can draw on. These in turn are shown to facilitate ambidexterity.

From the literature review, it was highlighted that culture influences action not by providing the ultimate values towards which action is oriented, but influences it by shaping a toolkit of habits and skills from which people construct strategies of action (e.g. Swidler, 1986). Culture supplies actors with tools for solving organisational problems, enabling everyday actions, and navigating the environment (e.g. Weber, 2005; Leonardi, 2011). As an example, Leonardi (2011) identifies increased effectiveness of organisational processes as a shared value while in their case study, Rindova et al. (2011) suggests improved efficiency and high quality of manufacturing are historical cultural resources which influences the behaviours of employees. Thus, cultural resources may shape middle managements exploitative, exploratory and ambidextrous behaviours.

Also, the diagram depicts exploitation, exploration and ambidexterity. From the literature, it is suggested that ambidextrous organisations engage in two types of activities, some focused on exploiting existing capabilities, while others are focused on exploring new opportunities (e.g. O'Reilly and Tushman, 2004). Exploitation includes things such as refinement, efficiency and implementation while exploration includes things such as flexibility, experimentation and variation (see March, 1991). Ambidexterity entails managing tensions and achieving the opposite objectives of exploration and exploitation (Andriopoulos and Lewis, 2009; Raisch and Birkinshaw, 2008). Therefore, it is likely that cultural resources may influence middle managers exploitative, exploratory and ambidextrous behaviours.

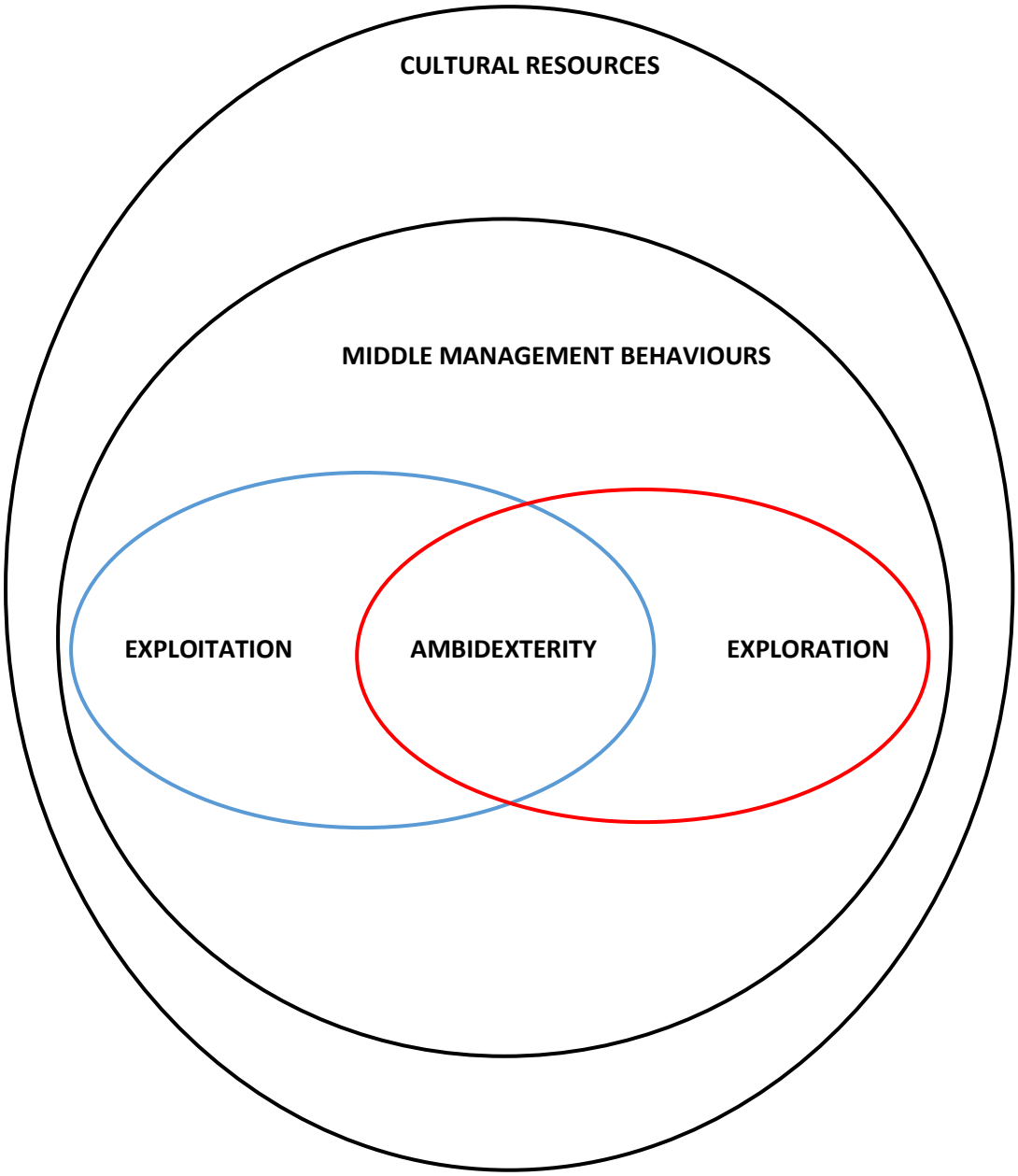


Figure 3: Research Framework

CHAPTER 3

Research Methodology

3.1 Introduction

The purpose of this chapter is to illustrate in detail the research debates, the research designs, the approaches to data collection, as well as discuss the approach to data analysis for this thesis. The methodology and philosophy which underpins the thesis is also subsequently clarified. The purpose of identifying the research design and methodology is in a bid to provide a detailed explanation of the methodological approach used in the thesis so as to assist in answering the research question which sought to unravel how middle managers draw on cultural resources from the cultural toolkit within an organisation for specific behaviours necessary to orchestrate exploitation, exploration, and to balance both simultaneously. It is important to first of all describe the research philosophies and how they relate to research in practice. The next section will present a justification of the epistemology and methodology underlying the research.

3.2 The Research Philosophies: Ontology and Epistemology

Research suggests that for a study to make a meaningful contribution it requires a solid philosophical foundation (e.g. Lee and Lings, 2008). Symon and Cassell (2012: 18) suggest that *"indeed we cannot operate without adopting some epistemological and ontological position."* Philosophy is concerned with constructing human knowledge into logical connected systems (Huges, 1980). Philosophy and social science has some relationship, and the relationship between them has historical, logical, as well as conceptual dimensions (Huges, 1980). Both philosophy and social research seeks to improve the knowledge of the world; but philosophy is concerned with what exists in the world while social science deals with knowable properties of what exists (William and May, 1996). It is important that a researcher have a standpoint or a frame of reference. Lincoln and Guba (2000) as an example theorised that choosing a particular methodology presupposes certain ontological and epistemological premise. This premise is underlined by assumptions regarding what

constitutes reality and how reality can become known to the researcher. Research also suggests that ontological issues and epistemological issues are not unconnected; for example, claims about what exists will lead to issues about how what exists may be known (e.g. Huges, 1980). Symon and Cassell (2012: 17) argued that: *"Epistemology is usually understood as being concerned with knowledge about knowledge. It is the study of the criteria by which we can know what does and does not constitute warranted, or scientific, knowledge while ontology is a branch of philosophy dealing with the essence of phenomena and the nature of their existence."*

Furthermore, Lee and Lings (2008) suggest that ontology deals with the study of the nature of reality while epistemology deals with the study of what we can know about reality, i.e. dependent on what the researcher believes reality to be. While, William and May (1996) define ontology as "*the branch of philosophy concerned with existence and the nature of those things that exist*" (p.200) and epistemology *as "a branch of philosophy concerned with how we know what we know and our justification for claims to knowledge*" (p.197).

Ontological and epistemological questions are therefore concerned with the nature and significance of empirical inquiry as well as concerned with philosophical arguments as such they cannot be answered by empirical inquiry (Huges, 1980). It is necessary for the researcher to take a stand. It is this variation in assumptions regarding philosophical stands that results in the different methodological approaches that can be adopted in organisational research (Symon and Cassell, 2012). Extant literature outlines two distinct approaches that can be labelled as positivism and interpretivism. These approaches are discussed below, and the decision as to which will guide the thesis is clarified.

3.2.1 Positivism

Positivism was initially proclaimed by the writings of Auguste Comte in the early nineteenth century (Huges, 1980) who coined the term '*positivist philosophy'*. Positivism can be described as an evolution of empiricism. Positivists contend that ideas are only meaningful if they can be verifiable or be tested empirically thus claiming that anything not directly observable is considered impossible (Lee and Lings, 2008). Some scholars suggests that the belief is that there is an objective and external world which can be measured through quantitative means since reality is independent of human perception (e.g., Gilbert, 2001). Moreover, Symon and Cassell (2012) posit that the aim of positivism is to produce generalizable knowledge through the testing of hypothetical predictions deduced from a priori theory. Also, Blaikie (1993) suggest that positivism relates to research which is conducted in an observable and tangible social setting. It can be viewed as a complex set of causal relations between events usually depicted as an emerging patchwork of relations between variables, i.e. *"a philosophy of the natural sciences"* (p. 14). Denzin (1989) and May (1993) similarly describe positivism as a perspective from view individuals are a phenomena to be studied externally, elucidating behaviour on the grounds of quantifiable observations that mostly lend themselves towards statistical analysis. Moreover, from the study of positivism, it is assumed that the methods and procedures of the natural sciences are appropriate to social science and also that only observable phenomena can validly be accepted as knowledge (Bryman, 1988). Thus, positivists have an assumption that there are independent causes which lead to observable effects and that evidence is an important factor in ensuring that research findings can be generalised to other contexts (see Remenyi et al. 1998). Positivism also employs the reductionist approach to explore relationships among variables of research (Bryman, 1988).

3.2.2 Interpretivism

Interpretivism represents an alternative approach to positivism that adopts qualitative methods in the study of phenomena. Within interpretivism, to understand particular social actions and settings requires the researcher to have a grasp of meanings which constitute action, albeit in a subjective manner (Denzin and Lincoln, 2000). Accordingly, the meaning which a researcher produces is considered as the original meaning of the social actions. Interpretivists believes that '*truth*' is an elusive concept, as such, individuals can create their own multiple and subjective versions of reality in the social world; thus rejecting the notion advocated by positivism that there exists a single, objective reality or '*truth'* which is only discoverable through scientific experimentation (Gilbert, 2001). In contrast to the positivist belief that scientific knowledge comes from direct physical experience, interpretivism suggests that reality is a purely individual interpretation of the world that we find ourselves (e.g. Lee and Lings, 2008). Interpretivist research typically adopts qualitative research methods, since interpretive epistemology is associated with understanding an organisation from the perspective of participants (Lee and Lings, 2008). Interpretive research allows for interpretations from the researcher to emerge often from participation in the social setting of the researched (Denzin and Lincoln, 2000).

The aim of interprivism is to reconstruct the self-understanding of actors engaged in particular actions. Lee and Lings (2008) present the three Rs' of interprevism: *Reductionism, Reflexivity, and Representation.* First, *reductionism* is concerned with simplification; here the idea of reducing complex social phenomenon to simple cause and effect relationships are rejected. More focus and emphasis is on the rich description of social situations thereby incorporating alternative viewpoints evidenced in the social setting and not just from over-simplifying the reality to diagrams with little relation to the specific social setting. Second, *reflexivity* refers to the role of the researcher in the research context, allowing for recognition

of the role the researcher plays in critically constructing interpretations from the social setting, and how this ultimately nurtures an understanding of the context. Reflexivity then promotes the acceptance that the involvement of a researcher as an active participant of the research process will shape the nature of the research process and the conclusions produced through it (Cassell and Symon, 2004). Finally, *representation* deals with what exactly interpretive research is; for example, it considers its research output to be one of many possible representations of specific social settings which may depend on the data generated as well as the interests of the researcher. However, there is a need for interpretive researchers to ensure that their interests do not overshadow the representations of the social context which they are researching (Lee and Lings, 2008).

Some scholars, for example Cassell and Symon (2004) and Symon and Cassell (2012) associate the interpretive approach outlined above with hermeneutics, stating that hermeneutics is a philosophical take on interpretive social science). For example, interpretivism and hermeneutics are generally characterised as the *Geisteswissenschaftkichte* or *verstehen* tradition of the human science which arose in the late 19th century and early 20th century in response to an already dominant positivist philosophy; their major claim was that there is a difference between human sciences *(Geisteswissenchaften*) and natural sciences *(Naturwissenschaften)* (Denzin and Lincoln, 2000). Denzin and Lincoln (2000: 193) suggests that: *"Interpretivist epistemology can in one sense be characterized as hermeneutics because they emphasise that one must grasp the situation in which human actions make (or acquire) meaning in order to say one has an understanding of the particular action."*

In a word, there is an epistemological choice which influences forms of research, either between an objectivist (realist) or a subjectivist (relativist) epistemological stance (Symon and Cassell, 2012). In this thesis, a subjectivist epistemological stand is adopted, and the

philosophical approach employed is the interpretivist approach based on the notion that *"social life emerges from the shared creativity of the individual"* (Cassell and Symon 1994: 4). An interpretivist epistemological viewpoint is adopted since this is deemed the most suitable for addressing the research question. The aim of the study was to explore how middle managers draw on cultural values during the orchestration of organisational activities. In achieving the aim of the research, there was a need to obtain insider perspective through observations and interviews of managers. It was important to have done this because it ultimately assisted in achieving the objective of the research and specifically in answering the research question raised in chapter 2. In contrast to the positivist aim which takes an outsider perspective to gain knowledge, the interpretivist epistemology stance was best suited to an exploratory and subjective study such as this.

3.3 Research Methods

In the previous section, the researcher arrived at a decision to adopt an interpretivist approach because it was the most suitable option for addressing the research question. The main aim of the research is to understand how ambidextrous organisations succeed both in incremental and discontinuous innovation and how this is influenced by the organisational culture. To achieve this, the researcher needed to obtain an insider perspective and explore the experiences of the employees. This is in contrast to the positivist stance of taking an outsiders' perspective to gain knowledge of an external reality which is independent of individuals' experience and contexts.

Further, choosing between qualitative and quantitative research methodologies show the way in which a researcher thinks about social realities (Strauss and Corbin 1998); this is also usually influenced by the ontological and epistemological viewpoints of the researcher. Once a researcher is clear about their personal philosophical perspective, decisions associated with

methodology follow, for example what type of data is best suited to answering the research questions most effectively (Lee and Lings, 2008). Lee and Lings (2008) also suggests that methodological decisions should be based on the most efficient ways of generating data to answering the research questions, instead of based on prior prejudices. Similarly, scholars on methodology and philosophical approaches have stated that the main decision for selecting a methodology or a specific approach depends on the aims of the research. For example, scholars such as Silverman (2000) and Miles and Huberman (2002) believes that the methodology used for a research should be linked with the topic and the objectives of the research.

In this thesis, the research method used is the interpretive qualitative methodology. This research method was used for several reasons. Silverman (2000) suggest that the choice between the different research methods should depend on what the researcher is trying to find out. It is important to first clarify that this present study was exploratory in nature. Thus, qualitative methodology was the most appropriate for the research topic and the research question under exploration. Specifically, the aim of the study was to understand how middle managers pick and choose from the cultural toolkit within their organisation which may assist them in the orchestration of ambidextrous activities. Miles and Huberman (1994) suggest that qualitative research methods are known for being powerful for relating to people's meanings to the world around them. Therefore, the research approach needed to be exploratory in nature to be able to understand how ambidexterity is being orchestrated by middle managers.

Also, the qualitative methodology was used because of the ontological and epistemological assumption of the researcher about the nature of reality discussed earlier. Lastly, due to the subjective nature of the study, qualitative methodology was the most appropriate approach to adopt. In what follows, qualitative and quantitative research methodologies are presented.

3.3.1 Qualitative Research

Qualitative research is traditionally concerned with '*what* 'and '*how'* questions (Denzin and Lincoln, 2003) and is subjectively oriented (Stake, 1995). Denzin and Lincoln (2000: 3) suggest that "q*ualitative research is a situated activity that locates the observer in the world; it consists of a set of interpretive, material practices that make the world visible*", while Bryman (1988: 46) notes that *"it is an approach to the study of the social world which seeks to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied"*. Qualitative research subsequently can be said to relate to any type of research that produces findings not arrived at by means of statistical procedures and quantification and are about people's lives, stories, behaviours, organisational functioning, or interactional relationships (Strauss and Corbin, 1990). It represents a naturalistic approach to understanding social reality through the meanings individuals attach to that reality (Denzin and Lincoln, 2003). In sum:

"Qualitative methods can be used to uncover and understand what lies behind any phenomenon about which little is known. It can be used to gain novel and fresh slants on things about which quite a bit is already known. Also, qualitative methods can give the intricate details of phenomena that are difficult to convey with quantitative methods" (Strauss and Corbin, 1990: 19).

An advantage of qualitative research is the validity of the data obtained through interviews when captured in sufficient detail (Hakim, 2000). Other advantages include its use in research areas where emphasis is on description and explanation in contrast to predictions of research outcomes (Hakim, 2000). Good qualitative research design employs sets of procedures which are un-biased as well as rigorous, while doing justice to the social contexts under study. Qualitative data may be generated through field-notes, interview transcripts, transcribed

recordings of naturally occurring interaction, documents, pictures, and other graphic representations, hence a variety of methods can be adopted (Coffey and Atkinson, 1996). Denzin and Lincoln (2003: 11) note that:

"Qualitative researcher use semiotics, narrative, content, disclosure, archival and phonemic analysis, even statistics, tables, graphs, and numbers. They also draw upon and utilize the approaches, methods, and techniques of ethnomethodology, phenomenology, hermeneutics, feminism, rhizomatics, deconstructionism, ethnography, interviews, psychoanalysis, cultural studies, survey research, and participant observation, among others."

Additionally, qualitative research is not new in tradition, it gained its strength from the growing awareness that scientific approaches are not suitable for the study of different individuals and objects of the natural sciences (Bryman, 1988). Bryman suggests that:

"Research methods were required which reflected and capitalized upon special character of people as objects of inquiry. A qualitative research strategy, in which participant observation and unstructured interviewing were seen as the central data gathering planks, was proposed since its participants would be able to get closer to the people they were investigating and be less inclined to impose inappropriate conceptual frameworks on them" (p.3).

Moreover, research suggests that qualitative research requires a critical analysis of the context under study, recognising the need to remain unbiased, think in abstract ways, as well as an ability to obtain valid and reliable data (Strauss and Corbin, 1990). Qualitative research is typically exploratory in nature and is usually much less structured than confirmatory studies promoted in quantitative research (Silverman, 2000). The methods used by qualitative researchers' shows common consensus that they can provide insights into deeper

understandings of social contexts that cannot be achieved by quantitative studies (Silverman, 2000). The table below exemplifies some features and claims of qualitative research.

Method	Features	Claim
Observation	Extended periods of contact	Understanding of 'subcultures'
Text and documents	Attention to organisation and use of such material	Understanding of language and other signs systems
Interviews	Relatively unstructured and 'open-ended'	Understanding 'experience'
Audio and video Recording	Precise transcripts of naturally occurring interactions	Understanding how interaction is organised

Table 5: Method of qualitative research (Silverman, 2000).

3.3.1.1 Qualitative versus Quantitative

There are distinct differences between qualitative and quantitative research. For example, Bryman (1988) suggests that contrasting qualitative research and quantitative research shows that both are divergent clusters of epistemological assumptions regarding what should pass as knowledge in the social world. Similarly, Gilbert (2001:34) argues that *"quantitative and qualitative research procedures are often viewed as providing 'macro' and 'micro' level perspectives on social world respectively."* Denzin and Lincoln (2003) contends that qualitative research is committed to naturalistic perspectives as well as to interpretive understanding of human experience, it most often stresses the need for an understanding of socially constructed nature of reality, the impact of what is studied, its relationship with the researcher, and the evidenced situational constraints which shape inquires. While quantitative research stresses analysis and measurements of casual relationship between variables as against processes. Moreover, quantitative research is associated with social surveys and experimental observations while qualitative research is associated with participant observation, unstructured and in-depth interviewing (Bryman, 1988). Though qualitative and quantitative researchers are concerned with an individual's point of view, qualitative research usually involves getting closer to the respondents through in-depth interviews and

observation (Denzin and Lincoln, 2003). The table below further elucidates some of the differences between quantitative and qualitative research.

	Quantitative	Qualitative
Role of qualitative research	Preparatory	Means to exploration of actors interpretations
Relationship between research and subject	Distant	Close
Researcher's stance in relation to subject	Outsider	Insider
Relationship between theory/ concepts and research	Confirmatory	Emergent
Research strategy	Structured	Unstructured
Scope of findings	Nomothetic	Ideographic
Image of social reality	Static and external to actor	Processual and socially
Nature of data	Hard, reliable	Rich, deep

Table 6: Some differences between qualitative and quantitative research (Bryman, 1988).

Qualitative research, however, has been criticised. Critics of qualitative research often assume that it is generally 'soft', and 'subjective', despite proponents of qualitative research highlighting qualitative research as having the same rigour as quantitative research (e.g. Lee and Lings, 2008). Irrespective of these criticisms, qualitative research was the best methodological approach which assisted in answering the research question raised in the earlier chapter (chapter 2). This methodological approach was also used based on the epistemological stance adopted in the thesis.

To summarise, the research method employed (interpretive qualitative methodology) was very important in exploring ambidexterity in practice. Given the research question and the aims of the research, the specific method used was the most appropriate, relative to other methods available. As highlighted earlier, the study was exploratory in nature. The researcher adopted March (1991)'s definition of exploration and exploitation during data collection. On the DAX 4 and the Optimus projects, he inquired about activities involving product or

process changes that were based on existing knowledge. He also inquired about activities involving product or process changes that were entirely new to the project teams and the organisation. As the projects progressed, questions were asked concerning how the innovation and improvement activities were being concurrently orchestrated. This sets of questions were followed by what impact the culture of the organisation had on the behaviours of the research respondents. It must be noted that emphasis was on the interviewees' personal perceptions regarding organisational ambidexterity.

3.3.2 Validity, Reliability, and Generalisability in Qualitative Research

This section will now discuss validity, reliability, and generalisability in qualitative research and clarify on its applicability and usefulness for this thesis.

3.3.2.1 Validity

Validity in qualitative research is associated with whether interpretations of a phenomenon fit its description or if the explanations provided are credible. Validity can generally be categorised into internal validity and external validity. First, internal validity addresses the process of gathering research data as well as the verification of the data interpretation by researchers (Hammersley and Atkinson, 1983; Bryman, 2004) and can be described as the degree to which research findings correctly map the phenomenon in question (Denzin and Lincoln, 1994). Second, external validity is the extent to which the findings of one study can be generalised to other situations or settings (see Anderson, 1987; Denzin and Lincoln, 1994). This can sit uncomfortably with qualitative research methods which capture the understanding of subjective meanings and experiences in particular settings, rather than a general 'truth' that can be applied across contexts.

Qualitative research, by its very nature, is context dependent such that research undertaken is context-specific and inevitably therefore is associated with particular cases (Bryman, 1988).

Some scholars have likened external validity to a variety of alternatives such as transferability (e.g. Lincoln and Guba, 1985), and generalisability (e.g. Anderson, 1987). These all relate to the important question of whether the findings of a study can be generalised to other settings or contexts. As highlighted earlier, this clashes with the tenets of qualitative research, especially as relates to subjective meanings and personal experiences of specific settings. However scholars such as Lincoln and Guba (1985) suggest that offering adequate description of the perspectives of participants within a setting may allow others judge if the finding can be transferred from one setting to another if similarities exists.

Specifically, by arguing about the internal validity of a research project such as this, scholars refer both to the process of gathering data and to the verification of the data interpretation by those involved in the project (see Hammersley and Atkinson, 1983; Bryman, 2004; Loukidou, 2008). The first concept reflects the canons of good practice (Bryman 2004) which entail practical considerations regarding the selection and use of methods for inquiry and the researcher's position in the whole process of the research (Hammersley and Atkinson, 1983, Miles and Huberman, 1984; Loukidou, 2008). Miles and Huberman (1984) also suggest the researchers' bias as a risk against validity. They argue that a typical source of error stems from the investigators' misuse of data in order to fit a certain pattern or theory. Lincoln and Guba (2000) refer to the issue as the "fairness" with which different viewpoints of respondents are represented in the analysis. In this thesis, some of the methods suggested so as to avoid such biases were employed. Specifically, making comparisons on the two projects on an ongoing basis and triangulation was done to ensure validity (see Miles and Huberman, 1984).

Further, internal validity may be hindered by the researchers' subjectivity. Lincoln and Guba (1985) talked about the critical subjectivity with which a researcher should be equipped. This

focuses on the self-awareness about a researchers emotional states, positions, past experiences, prejudices and orientations that are likely to shape the interpretation and the approach to the study (see Loukidou, 2008).

The personal beliefs of the researcher and the theoretical background about organisational culture and organisational ambidexterity were not set aside. However, they were challenged throughout the whole research process. As Denzin and Lincoln (2000) asserted, knowledge is constructed through a dialectic in which participants learn and challenge each other. Importantly, the researcher thought it useful to keep a very basic record about his own experiences in the field, in order to describe the general feeling that an 'outsider' got from the organisation (see Loukidou, 2008).

3.3.2.2 Reliability

Reliability refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions (Silverman, 2000). In other words, reliability deals with the consistency between different research findings and stability of results over time by different researchers. LeCompte and Goetz (1982) suggests that external reliability is the extent to which a research project can be replicated. In addition, they suggests that for any project to be replicated, the researcher needs to adopt similar methods adopted in the original project. Moreover, they suggests that a possible solution of multiple observers is necessary for consistency and reliability to be achieved. However, Bryman (2004) suggests that the research design and data collection method in qualitative research makes the notion of reliability difficult to apply. For example, in the case of semi-structured qualitative interviews, there can't seem to be stability and consistency in the findings of such research and the value of the case study is its uniqueness (see Janesick, 2000). Importantly, it would have been very difficult to try to achieve external

reliability in the course of this PhD project, moreover that wasn't the aim the researcher was trying to achieve.

Further, quantitative research seeks to ensure rigorously that findings by more than one researcher will produce similar results or reliability. King (1994) suggests that in qualitative research, the interviewers' sensitivity to subjective aspects of his or her relationship with the interviewee is an essential part of the research process. In a qualitative context, reliability concerns the researchers' interpretation of data and to what extent this interpretation reflects on what the interviewee was actually saying. King (1994) suggests that researchers should acknowledge their own prejudices and assumptions and should allow themselves to be surprised. A way to check the accuracy of understanding is to cross check with the interviewees themselves at the time of the interview in order to avoid making incorrect assumptions. Also, during the interviews, the researcher sought clarity on issues raised by the respondents in a bid to get a detailed understanding and ensure that the interpretations did not capture incorrect assumptions. The interpretations of the data generated from interviews and the researchers observations in the field were discussed at length at various meetings with his research supervisors. The discussions from the meetings were helpful in gaining multiple interpretations of the data. These processes of multiple interpretations of the data further ensured reliability of the thesis.

3.3.2.3 Generalisability

Generalisability deals with the transferability of research results to other situations, i.e. the applicability of theoretical propositions across different settings (see Bryman 1988). Realist researchers usually argue that considering generalisability of research is of paramount importance for quality research (Lee and Lings, 2008); this is because of their beliefs about objective reality. But with interpretive qualitative researchers, this belief is not the same,

neither is it the purpose of interpretive researchers because interpretive research is associated with individual interpretations and subjective meanings of social contexts (Lee and Lings, 2008). Research output from interpretive research is generally context-dependant as well as dependent on the social situation at the particular time, the participants, and the researchers; hence there is really no basic objective reality to be general about (Lee and Lings, 2008). Also, interpretive qualitative research does not aim to create a general law which can be applied across different social contexts. However, generalizability does have a role in qualitative research, especially in theory extension and development. Thus, the researcher identified various consistencies and differences in the research findings and related these emerging insights and theory with existing literature (e.g. Reason and Rowan, 1981).

In the next section, the researcher discusses the research design and identifies the method used for this thesis.

3.4 Research Design

Research designs range from case studies, experimental designs, cross-sectional designs, longitudinal designs, as well as ethnographic designs. In the case of experimental designs, the main purpose is to study casual effects; these designs are relatively narrow and focused in the type of research outcomes it produces but can be used to provide casual links (Hakim, 2000). Experimental research designs have been described as the ‘gold standard’ of research in social sciences (Lee and Lings, 2008). Cross-sectional designs involve collection of research data at a single point in time; this does not take note of ‘before and after effects’ (Lee and Lings, 2008). As compared to experimental designs, cross-sectional designs offer an opportunity to collect data on more variables (Lee and Lings, 2008). Also, longitudinal designs are generally expensive, time-consuming, and difficult; this has made it far less

common in social research; it involves the measurement of the same variables at different point in time.

The researcher appreciates the advantages associated with these other methods, and the fact that *"...any process of methodological engagement inevitably articulates, and is constituted by an attachment to particular philosophical commitments that have implications for research design*" (Symon and Cassell, 2012: 15). Nonetheless, for the purpose of this thesis, and in answering the research question, the thesis adopted a combination of ethnographic research design, case study and a longitudinal research design. The reason for this was to get a closer meaning of events and the social processes in the social context as well as understand first hand, the meanings which respondents make of their organisational environment. This also follows on from the interpretivist approach being adopted by the researcher as well as the adoption of the qualitative research methodology. Also, these research designs were used because of the exploratory nature of the research which sought to investigate how managers orchestrate ambidextrous strategies and how these strategies are shaped by elements of the organisational culture in high technology firms. Exploratory research designs are flexible and versatile. This allowed the usage of data collection methods such as observation, documentary reviews and interviews. At different stages of the fieldwork, the researcher used these methods of data collection to gather relevant data for the thesis. These assisted in triangulating the data collected. From the review of literature and the gaps identified, the researcher formulated some research questions. Once an initial understanding of the research projects (DAX 4 and Optimus projects) had been achieved through observation, documentary reviews and informal conversations, the original research questions were edited. The researcher then proceeded to conducting the first phase of the interviews. This was followed by further observations on the shop floor, meetings and informal conversations. A second and third phase of interviews were also conducted. More details about the observation and

interviews can be seen in section 3.5.3 and 3.5.5. Figure 4 below depicts a flowchart of the research design, method of data collection and the method of data analysis employed to meet the objectives of the thesis.

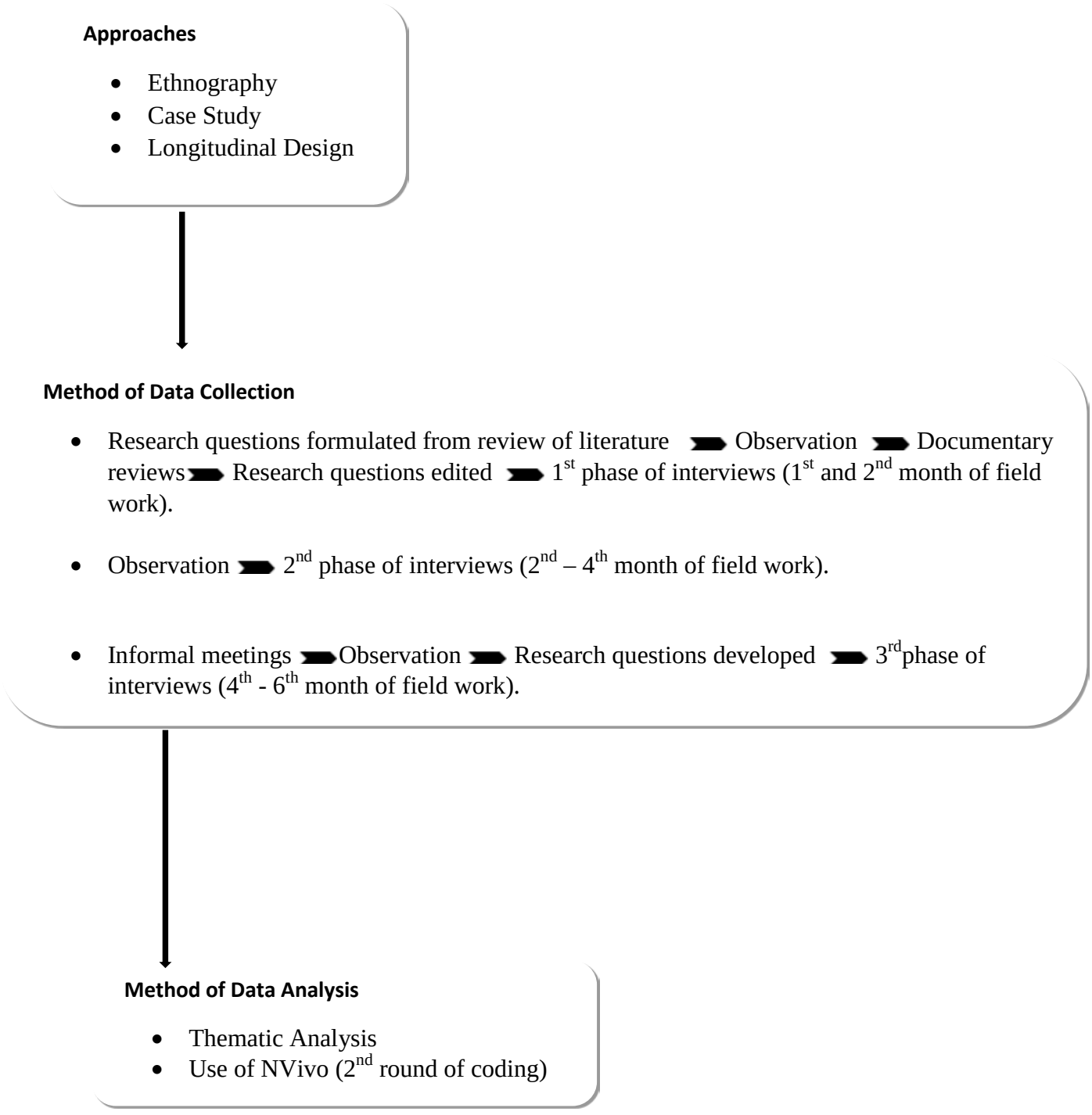


Figure 4: Summary of Research Design

In what follows, the research designs adopted for the purpose of the thesis are discussed in much more detail.

3.4.1 Ethnography

Anthropology enthusiasts believe that if a researcher seeks to understand a group of people or an organisation, the researcher must engage in an extended period of critical observation (Silverman, 2000). Buchanan and Bryman (2009) note that ethnography allows for the creation of a deeper understanding of a topic under examination, as well as provide multiple perspectives and an opportunity to examine organisational processes. Brewer (2000: 10) describes ethnography as: *"the study of people in naturally occurring settings or 'fields' by means of methods which capture their social meanings and ordinary activities, involving the research participating directly in the setting, if not also the activities, in order to collect data in a systematic manner but without meaning being imposed on them externally"*.

Ethnography is both a process and a product, as such ethnographers' lives are embedded within their field experiences in such a way that all of their interactions involve moral choices (Denzin and Lincoln, 2000). Ethnography by design is orientated to the study of the everyday (Bryman, 1988) and is based on observational work in particular settings (Silverman, 2000). This requires the researcher to become immersed inside a social setting in a bid to understand and be able to describe the norms, values, behaviours, and rituals of that setting (Lee and Lings, 2008). Subsequently, the knowledge of the social world can be acquired through a deep familiarity with the social setting by capturing the voices and experiences of the people in the setting.

The techniques used in gathering data under ethnography include in-depth interviews, discourse analysis, personal documents, and participant observation (Cassell and Symon,

2004). Other methods such as video, photography and film, as well as the internet have begun to join the list of techniques (see Lee and Lings, 2008). While these methods are also applicable in non-ethnographic research, the distinguishing feature in ethnographic studies is that they are used to explore a social setting of people by close involvement in the field (Cassell and Symon, 2004). Such methods are used in combination as a means of triangulation (Stake, 1995; Cassell and Symon, 2004). Denzin (1970) describe triangulation as a research approach with multiple observers, sources of data, theoretical perspectives, and different methodologies combined.

Furthermore, ethnography is embedded within the interpretive research philosophy (Lee and Lings, 2008). Proponents of this research philosophy believe that first-hand experience is a more suitable means for understanding a phenomenon than looking at it from the outside (Lee and Lings, 2008). Lee and Lings (2008) further suggests that ethnographic studies should normally result in a rich and thick description of a specific social setting which involves creative interpretations of data generated from the researched case.

However, advocates of the natural science criticise this approach for failing to meet the tenants of natural science as applicable to social life (Cassell and Symon, 2004). Nonetheless, this thesis focused on understanding the quality and meanings of the personal experiences of the participants in the selected social setting; as such the researcher recognises the criticisms of ethnography but used ethnography as a research design method due to its numerous advantages highlighted earlier. Specifically, the use of ethnography as a research design method allowed for a clearer and deep understanding of the researched context. Also, taking after Lewis's (1985) study, the researcher immersed himself in the life of the people who were being studied through a single case over a period of six months study.

3.4.2 Case Study

The case study is but one of several ways of doing social science research. Other ways include experiments, surveys, histories, and the analysis of archival information (Yin, 2003). This thesis adopted the case study approach because of the exploratory nature of the research question which was addressed. Case studies can be described as one of the most common means of qualitative research (Denzin and Lincoln, 2003). Yin (2003) suggest that it is the preferred strategy when "*how*" or "*why*" questions are being posed, when the investigator has little control over events, and when the focus is on a contemporary phenomenon within some real-life context. Hakim (2000: 59) suggests that:

"Case studies take as their subject one or more selected examples of a social entity - such as communities, social groups, organisations, events, life histories, families, work teams, roles or relationships – which are studied using a variety of data collection techniques."

Case studies build on the 'tactic knowledge' of its readers (Guba and Lincoln, 1981). It is a holistic research design which can paint a credible picture as well as offer thick description. At the simplest level, case studies can provide descriptive accounts of one or more cases, while at the most rigorous level the approach can achieve experimental isolation which provides a strong test of prevailing explanations and ideas (Hakim, 2000). Case studies are used widely in organisational studies; for example in organisational psychology, sociology, anthropology, employment relations, and political science (Cassell and Symon, 2004). They regularly contain significant elements of narratives and storytelling that approach the complexities and contradictions of real life phenomenon (Flyvbjerg, 2006).

Case study methodology involves detailed investigation through the collection of data over extended periods of time of specific phenomena and within chosen contexts with the aim of understanding the processes and theoretical issues underpinning the phenomenon under

investigation. Case studies involve the detailed analysis of single or multiple case. The closeness of case studies to real-life situations and its multiple wealth of details are important because of the development of a nuanced view of reality. That is, case studies delineate specific situations within a social setting, such as the study of new policy implementation in an organisation (Lee and Lings, 2008). They are generally associated with an intensive examination of single situations, most commonly defined as a single social setting (Lee and Lings, 2008), with specific focus of unique features of the settings and creates context dependent knowledge that are necessary in the study of human affairs.

A single case study can provide useful information which can answer research questions, and can assist in disentangling the uniqueness of organisations. Though single case studies have a mixed reception in literature, scholars such as Buchanan (1998) argue that much organisational research that focuses on change is evaluated through the single case study approach. Buchanan (1998) agrees that the findings of a single case study in an organisation may not be the case in another, but the case study choice is not based on representativeness, but as an opportunity for learning. In this thesis, a single case study was used. This qualitative research approach was used mainly because of the exploratory nature of the research question and because of the necessity of investigating and examining the contemporary real-life situation within the researched organisation. This approach was also used because the researcher sought to understand how the organisation and its environmental setting impacts the social processes, as well as the new or emerging processes or behaviours (see Cassell and Symon, 2004). Besides, Flyvbjerg (2006: 235) suggests that *"the advantage of case studies is that they can "close in" on real-life situations and test views directly in relation to phenomena as they unfold in practice."*

In sum, as a research strategy, the case study is used in many situations to contribute to our knowledge of individual, group, organisational, social, political, and related phenomena (Yin, 2003). The overall approach of the case study is generally inductively orientated focusing on processes in social settings (Cassell and Symon, 2004). The main emphasis is the ability to understand processes as they occur in specific settings as such Cassell and Symon (2004) suggests that research questions about *'how'* and *'why'* rather than *'what'* and '*how much*' are best suited to the case study strategy. The aim of case study is not on theory testing but on theory building through an open-ended inquiry which allows the researcher to capitalise on inductive methods of research (Cassell and Symon, 2004).

3.4.3 Longitudinal Design

Longitudinal case studies involves collecting data in real time. Symon and Cassell (2012: 153) suggests that longitudinal research design involves *"....a voyage of discovery where neither outcomes, nor theoretical frames, nor methodological designs can be easily pinned down a priori.* Similarly, Hakim (2000: 111) contends that "*perhaps the greatest danger is the failure to design the study fully before it gets under way"*. Therefore, under longitudinal research design, neither the researcher nor the respondents usually have an idea of the outcomes of the research; as such there are no biases, because most issues are live and immediate. Longitudinal designs encourage flexibility as regards the methods employed because the researcher usually have no control over what is happening in an on-going process, as such there is a need to appreciate ambiguity in the process of the research (Symon and Cassell, 2012). Symon and Cassel (2012: 153) further suggest that *"longitudinal researchers therefore need to be attentive to the sensitivity of conducting research and reporting results to organisations in the midst of a change process."*

Longitudinal designs provide information on a large volume of gross change at micro levels using single samples or groups with repeated data collection over an extended period of time (Hakim, 2000). The concept of time here depends on the observation under study and the context, for example, studies of unemployment may continue for one or two years or even longer (Hakim, 2000). There are therefore practical problems associated with longitudinal research that need to be considered. These might include sample attrition and non-response, which can weaken the values of any findings made from the research, the research aims and objectives may be overtaken by events or expected results of the findings produced by other similar studies and the possibility of the researcher being attracted to other interests (Hakim, 2000). Factors such as respondents moving house or decide not to participate anymore in the research may also result in sample bias and create unique problems for researchers (Lee and Lings, 2008). Albeit, the longitudinal research design was useful for this thesis. A longitudinal approach through a case study is deemed appropriate as a means to undertake ethnographic research to understand how processes and phenomena evolved at the social setting over time. Moreover, this research design method is adopted because it enables a closer analysis of organisational activities and offers a more detailed understanding of the evolution of decisions made by actors within the organisation (see Symon and Cassell, 2012).

3.5 Data Collection

3.5.1 Interviews

Interviews are the most widely used method of conducting qualitative research in social contexts and involve conversations which assist in gaining an understanding and expression of opinions from participants in social settings (Holstein and Gubrium, 2002). Interviews involve an *"encounter between a researcher and a respondent in which the latter is asked a series of questions relevant to the subject of the research"* (Ackroyd and Hughes, 1983: 66). The purpose is to gather description of the life-world of the interviewee with respect to

interpretation of the meaning of the described phenomena (Kvale, 1983). It also affords both the interviewer and interviewee with great flexibility, for example, Lee and Lings (2008: 217) suggest that "*interviewing is useful because it is very flexible, both in terms of content and time, and can be tailored to suit research questions, respondents, and your own lifestyle much more effectively than many other qualitative methods*."

While affording greater flexibility in data collection, interviews can serve as a mechanism which is best suited to examining topics that carry different levels of meanings, particular in complex organisational settings (see Cassell and Symon, 2004). The form of qualitative interviews can vary in their methodological features, for example in length, style of questioning, and number of participants; they may be conducted on the telephone, via the internet, or face-to-face (Cassell and Symon, 2004). The aim here is not to quantify interviewee experiences, but to gain an understanding of events in the social setting (Cassell and Symon, 2004). Therefore, qualitative research interviews are not based on a formal structure of questioning but instead, questions are guided by interview guides containing considered topics which the interviewer intends to seek insights on, using probing questions which may serve as a follow-up to gain greater detail from the participants Cassell and Symon, 2004). Following Cassell and Symon's (2004) assertion, the interview guide for this thesis was produced based on prior literature review, on the researcher's personal experience, and on preliminary work such as discussions with the researcher's supervisors.

Structured interviews: A key characteristic of structured interviews is that it deconceptualise the questions and forces the researcher's perceptions on the interviewee. In other words, the interviewee only passively respond to a set of pre-determined questions. This is in contrast to semi-structured interviews which has a low degree of structure, with a high proportion of open, probing questions (see King 1994).

Unstructured interviews: Unstructured interviews provide greater breadth of data than other types of interviews (Denzin and Lincoln, 2000). When conducting an unstructured interview, the researcher may use a list of topics which he expects the respondents to talk about while phrasing the questions the way they like and joining in the conversation by discussing what they feel themselves (Gilbert, 2001). This method allows researchers use a few brief topics to prompt the respondents; probing the respondents is mostly done to follow up on points which are of interest to the interviewer (Lee and Lings, 2008). Unstructured interviews are mostly used in situations where the researcher has a feeling that having a structure will impose certain views on the interviewee thus lead to prejudices and bias (Lee and Lings, 2008). Denzin and Lincoln (2000) classifies in-depth interviews as a type of unstructured interview. In-depth interviews usually go off track pursuing interesting angles while remaining flexible. Researchers look for rich, in-depth answers which tap into personal experiences, feelings, and opinions from the respondents (Lee and Lings, 2008).

Semi-structured interviews: Semi-structured interviews allow researchers to ask different questions the same way each time with the freedom to change the sequence and probe for more information to ensure adequate detail and understanding (Gilbert, 2001). When conducting a semi-structured interview, the researcher can investigate phenomenon which are relevant to the research topic while allowing the respondent some freedom to reply in their own way (Bryman, 2004). Semi-structured interviews allows for a more guide in that it is guided by a more detailed *topic guide* (interview guide) that usually contains some description of questions to ask, as well as probing when necessary to chase up or clarify about a point (Lee and Lings, 2008). The topic guide is an important document in that it serves as a memory prompt and offers a schedule to the interview; it also helps the flow of the interview. Without this guide, the interview process can turn chaotic going off completely, or become awkward. Semi-structured interviews are mostly employed when the

researcher has a good understanding of the theoretical nature of the study, for example, from the review of literature; this allows for the structure of a good topic guide which means that the interviews can be comparable (Lee and Lings, 2008). Lee and Lings (2008) also suggests that it is important to begin each interviews with basic demographics of the respondents, this may offer an insight into the context of the interview transcripts later.

In sum, an important factor which determined the use of interviews as a particular method for data gathering for this thesis was the exploratory nature of the research. Also, the ontological and epistemological assumptions of the researcher, coupled with the objectives which the research sought to achieve determined the use of interviews as a method of data collection (see Kvale, 1996). Specifically in this thesis, the chosen technique based on the advantages and chosen research design, is the semi-structured interviews. The thesis employed semi-structured qualitative interviews because it suited the objective of the research which sought to unravel how middle managers draw on cultural resources from the cultural toolkit within an organisation to shape and enable their behaviours.

3.5.2 Observation

Cassell and Symon (2004) suggests that observation is chiefly concerned, as its name suggests, with the observation and recording of human activity. Maxwell (1996) suggests that the significance of observations lies in the fact that they enable researchers to draw inferences about someone's meaning and perspective that couldn't be obtained relying exclusively on interview data. Therefore, Silverman (2001) suggests that data from observation can contribute immensely to an understanding of how organisations function.

Observation was once thought of as a data collection method which was employed mostly by ethnographers who regard themselves as objective researchers extrinsic to the social settings

they studied (Denzin and Lincoln, 2000). Bryman (2004) for example suggests that the researcher participates in a certain social group so as to understand the culture as well as processes and meanings of the events which occurs in such a social group. Observation and ethnography are therefore often used interchangeably (see Bryman, 2004).

There are two types of observations in qualitative research, the participant, and the non-participant observation. Participant observation involves social interaction between the researcher and informants in the environment of the research informants. Bryman (1988: 45) suggests that "*participant observation entails the emersion of the researcher among those whom he or she seeks to study with a view to generating a rounded, in-depth account of the group, or organisation."* This enables the researcher to observe first-hand the day-to-day experience and normal behaviour of the research informants, with emphasis on specific situations, feelings, and interpretations (Cassell and Symon, 2004). In this instance, the researchers own experience is considered as an important and legitimate source of data.

There are a number of challenges associated with participant observation. Brewer (2000: 59) highlights that a fundamental challenge is *"to maintain the balance between 'insider' and 'outsider' status; to identify with the people under study and get close to them, but maintaining a professional distance which permits adequate observation and data collection*". This notion of 'insider' and 'outsider' status is discussed by Symon and Cassell (2012) who argue that: *"although outsiders miss out on the obvious advantages enjoyed by insiders in the process of accessing research sites and conducting qualitative fieldwork, they are thought to be more successful that the insider in maintaining an objective detachment from the research site and the respondents"* (p. 179).

In addition, Taylor and Bogdan (1984) suggest that researchers need to show sufficient interest in people's views, avoid coming across as arrogant, and do favours where necessary

and possible, this they suggest, will lead to mutual trust and co-operation. An important and critical factor here is also the issue of reflexivity, which deals with self-reflection in the process of analysing field data. During observations, there may be a need to conduct interviews to gain an understanding of the social context of the group in which the research is being conducted. The researcher usually needs to have a process of managing their identity once embedded in the social setting in a bid to convince the gatekeepers that the research is not threatening and will not harm the organisation in any way (Cassell and Symon, 2004).

Observations do however have their disadvantages. Research suggest that it can be very tasking, as well as pose a great challenge to go into a social setting to observe it (see Lee and Lings, 2008). It can also be very intimidating and scary, and may even be a dangerous experience. For example, studying football hooliganism or drug-dealing cultures (see Lee and Lings, 2008). Another disadvantage of participant observation is that the people in the social setting may react by engaging in untypical or extreme forms of behaviour because of the presence of the researcher; as well as ethical dilemmas associated with it (see Cassell and Symon, 2004). Another disadvantage of participant observation includes the unsystematic nature of the method, as well as the potential for the researcher to invade the privacy of individuals or groups in the research setting (Guba and Lincoln, 1981).

Nonetheless, observation offers a great insight into social settings and has many advantages that can help to address the research question at hand. For example, the development of confidence and trust between the researcher and the participants in the social setting reduces the likelihood of being deceived by participants giving an authentic insight into the subjective experiences of the participants (Cassell and Symon, 2004). Researchers can also overcome some of the challenges and deal with the disadvantages by having useful friends, colleagues, or having the support of gatekeepers such as leaders or managers (Lee and Lings, 2008). This

can be achieved by clearly stating the purpose of the research and allowing the flexibility of negotiation and offering a return for the access granted. Lee and Lings (2008) for example suggest that gaining actual access to 'public' situations (e.g. communities, gangs, clubs) can be easier, but in almost every social situation even if you can gain physical access, you will need some way 'in' to the social side of that situation.

Participant observers may not be able to observe the whole process and analyse the entire organisational setting, hence the use of other methods. As highlighted earlier, researchers' conduct unstructured or structured interviews, review documentary materials, and even use postal questionnaire surveys in a bid to triangulate their data; this allows the data generated to be corroborated from different sources (Bryman, 1988). Some scholars, (e.g. Webb et al. 1966) suggests that social scientist are most likely to show greater confidence in their research results when these results are collected from more than one method of investigation; this strategy has been referred to as triangulation. The importance of triangulation has also been discussed under ethnography and under the case study research design. In this thesis, observation was employed as a means for gathering relevant data which assisted in triangulating the data.

3.5.3 Research Access

Choosing a case study ultimately depends on the nature of the research and what the researcher intends to achieve, but gaining access to organisations has never been easy. There are people in organisations that are important and influential when it comes to deciding if a researcher will be granted access (Cassell and Symon, 2004). Therefore, an important requirement is for the researcher to identify the gatekeepers of such organisations. In the case of this research, the process of recruiting a case organisation started in February 2012. A number of organisations were contacted (e.g. Unipart Logistics UK, Zenith Bank Nigeria,

Adey Steel UK, Chevron Nigeria, Cadbury Nigeria, Guarantee Trust Bank Nigeria, Etisalat Nigeria, HSBC UK, MTN Nigeria, Frazer-Nash Consultancy UK, Nigerian Breweries Plc., Defence Science and Technology Laboratory UK, amongst others). In contacting possible case organisations, the researcher sent a copy of the research proposal (see appendix A), curriculum vitae, and a letter of endorsement from the university (see appendix B) via email and subsequently telephone contact to follow up. These organisations were targeted specifically because there are medium or large firms which have multiple business units.

On the 25th of September 2012, a 6 month doctoral internship was agreed with Brush Electrical Machines Ltd UK which started on the 5th of November 2012. This gave the researcher full access to over 70 middle managers and all 9 senior managers within the organisation. The researcher was placed within the human resources department to analyse a recent employee survey and make recommendations as to the next course of action, alongside data collection.

The researcher actively participated and observed processes at the organisation for 6 months, attending monthly team briefs, video conferences between middle managers and customers, weekly internal meetings, workshops and coffee sessions with middle managers, senior managers, and the managing director. This was in a bid to understand the culture, processes, and meanings which the respondents make of their specific context (e.g. Bryman, 2004). The researcher also visited middle managers in their offices on a weekly basis. Most of their offices are located at the entrance of the shop floors. From this point, majority of the events on the shop floor can be captured with ease. The visits/tours included guided tours with the middle manager and their team leaders in charge of each shop floor, or personal tours done by the researcher alone. During each of these tours, the researcher observed the information which was displayed on the visual boards at the entrance of the shop floors. The researcher

was allowed free access to speak to all members of staff, as well as take pictures on the shop floor. On the boards, some of the projects objectives were displayed in bullet points with timeline of accomplishing them. Issues relating to quality deviations, sales and orders for each month, and the whole year, health and safety issues, on-time delivery percentages, plant efficiency levels, average manufacturing lead time, current product savings figures, VA/VE savings (value added/value engineering), internal and external warranty cost figures, trends of defects for each day, week, and month, structure and hierarchy within each department were observed and recorded by the researcher.

The researcher collected both contextual and specific documents during the course of the research. The contextual documents collected and analysed included the organisational organogram, power-point slides of monthly team briefs, the company employee engagement magazine, product brochures, policy statements, annual and bi-annual financial reports, public relations materials and press releases, the strategy of the managing director, the strategies of the senior managers for each of the nine departments, company rules and regulations booklet, industry reports from the energy sector and specifically power generation industry, web-based information on the organisation and its competitors, amongst others. Also, the specific documents collected and analysed included working documents, project charters, project team structures, project aims and objectives, project time plans, and documents relating to how project strategies are implemented through standing instructions and process charts. Other reviewed and analysed documents include training hand-outs, performance management/review documents, role specification, and induction documents for middle managers. Copies of emails exchanged by managers on the projects were also reviewed.

The documentation gathered provided a very rich source of data which gave deep insights into the organisational life, culture, and the processes within the organisation. They helped the supplementation and the triangulation of the data collected through other methods and means, for example, interviews and observation. A potential criticism often levelled about documentary reviews is that the documents may be subjective and not offer an accurate record of events and processes within the organisation (see Forester 1994). Irrespective of the criticism above, and specifically for the purpose of this thesis, it was not the aim of the researcher to get down to one objective reality, but to understand reality from the perspectives of the participants.

3.5.4 Recording Data: Audio-Taping

Gaining an access to a social context, an organisation, or a group of individuals is a start-off point for collecting qualitative data. But recording the generated data is of high importance. Researchers usually face the alternatives of note-taking, tape-recording, or other kinds of electronic recording device. In the case of interviews, Silverman (2010) suggests that with improved technology and a massive recognition for the advantages of play back interviews, interviews should always be recorded; this he said, is because the days of pen and paper are long gone. For the purpose of this research, the researcher used a recording device, as such, the researcher was able to pay maximum attention to what was being said during the interviews (see Bryman, 2004). This allowed the interviews to proceed normally without any distractions and allowed the researcher to fully engage the respondents. This wouldn't have been possible if the researcher was taking notes during the interviews. Also, because of the length of the interviews, recording as the respondents spoke proved to be very useful. From the recorded interviews, asides from what was said, the researcher was able to capture and analyse how what was said was being said; for example, pauses, emotional tones, and laughs (see Bryman, 2004). None of the respondents declined to be tape recorded, as such all the

interviews were tape-recorded. Some of the participants showed great interest in the research study, and were expectant of the outcome in the form of a research report. Some of the interviewed middle managers also suggested names of other middle managers which the researcher had not originally planned to interview.

Further, Lee and Lings (2008) suggests that note taking in qualitative interviews may have negative influences on the concentration of both the interviewer and the respondent; but Cassell and Symon (2004) noted that note taking can become handy in observation processes. Cassell and Symon (2004: 156) further noted that *"since note taking is the principal means of recording data, participant observers place a heavy priority on comprehensiveness and self-discipline, stressing that it is common for observers to devote up to six hours of writing up for every hour spent in the field.*" Hand written notes were taken when the researcher visited the various shop floors, had informal conversations, or attended meetings; these notes were written up and analysed as soon as possible. The notes were extremely useful for capturing other necessary information which assisted in offering deeper insights and understanding of the researched organisation.

3.5.5 Recruiting Participants

Symon and Cassell (2012) suggest that the choice of research participants should be judged by the focus of the research and in answering the research questions. They suggests that it is important for qualitative researchers to have a deep consideration for how research participants will be chosen, and from whom data will be collected in a bid to answer the research questions as well as meeting the aims of the research. Moreover, Creswell (1981) argued that it is important that a researcher chooses accessible participants who also are prepared to provide the necessary information which will assist in explaining the phenomenon being explored. Symon and Cassell (2012) suggests that even when research

access has already been granted by gate keepers, this may still be overruled at a higher level in the organisation. But in the case of this research, the access was agreed from the highest level in the organisation (i.e. the managing director). However, there was an initial reaction of suspicion from some of the middle managers, but through informal meetings and discussions, the researcher was able to assure them of the genuineness of the research and of their confidentiality. Accordingly, the researcher carefully selected managers who could deliver first-hand information about the culture of the organisation, as well as about processes, challenges, and new developments. Participants were recruited through snowballing technique, suggestions from the human resources department, and some middle managers putting themselves forward to be interviewed. Lewis-Beck et al., (2004) describes snowballing as a technique for gathering research or interview respondents through the identification of an initial subject who is used to provide the names of other informants. These informants may themselves open possibilities for an expanding web of contact and inquiry. The snowballing method can be placed within a wider set of methodologies which takes advantage of the social networks of identified respondents, which may provide a researcher with an escalating set of potential contacts (Lewis-Beck et al., 2004). Thus, fifty-five qualitative interviews were conducted with managers with different organisational positions (see table below).

Senior Management Position	**Years of**	**Number of**

	Employment	Interviews
Operations Director	3 Years	2
Aftermarket Director	1 Year	2
Engineering Director	15 Years	2
Finance Director	9 Years	1
Procurement Director	20 Years	2
Human Resources Director	4 Years	2
Continuous Improvement Director	3 Years	2
Project Director	15 Years	1
IT Systems Director	26 Years	1
Middle Management Position		
Operations Manager (Stator)	3 Years	3
Operations Manager (Rotor)	8 Years	2
Operations Manager (Manufacturing)	42 Years	2
Operations Manager (Engineering)	40 Years	2
Operations Manager (Transformer)	1 Year	2
DAX 4 Project Manager	6 Years	2
DAX 4 Electrical Engineer	21 Years	1
DAX 4 Mechanical Engineer/ Optimus	6 Years	1
Engineering Resource Manager	2 Years	1
Chief Electrical Engineer	1 Year	1
Engineering Project Manager	10 Years	1
Mechanical Design Engineer	38 Years	1
Chief Mechanical Engineer	32 Years	1
Chief Insulation Engineer	22 Years	1
Aftermarket Engineering Manager	2 Years	1
Erection and Service Manager	25 Years	2
Tendering Manager	2 Years	1
Field Service Manager	48 Years	2
Aftermarket Commercial Manager	3 Years	1
Head of Aftermarket Projects	35 Years	1
LEAN Engineer	32 Years	1
LEAN Engineer	7 Years	1
Continuous Improvement Manager	26 Years	1
Capital Expenditure Manager	2 Years	1
Materials Controller	28 Years	1
Senior Commodity Buyer	17 Years	1
Learning and Development Manager	3 Years	1
Project Manager	5 Years	1
Health and Safety Manager	21 Years	1
Site Maintenance Manager	6 Years	1
		Total =55

Table 7: Organisational positions and years of employment of participants.

Fifty-five interviews were conducted over a period of six months, with some respondents interviewed twice. All the interviews were transcribed as soon as possible. After compiling a list of potential interviewees, the researcher sent out emails and meeting requests via the organisations calendar to the prospective interview respondents notifying them of the purpose, place, date, and time of the research interviews. The expected duration of the interviews, as well as confidentiality issues were also communicated via email to the potential interviewees. On most occasions, the respondents turned up at the agreed time, while some interviews were rescheduled due to the busy schedule of some of the managers. Only one middle manager declined to be interviewed, without giving any specific reason. All the interviews were conducted privately, and most of them took place in a meeting room outside the human resources office. The meeting room could be locked, as it did at all times during the interviews, in order to ensure that no other employee was overhearing the conversations. Nonetheless, there were instances that the interview process was interrupted, this was mainly when the interviewees had to respond to phone calls. Some interviews were conducted inside the offices of some of the interviewed middle managers. Some of these offices are located at the entrance of the shop floors. The researcher could observe that there was a feeling of prestige as some of the middle managers appeared to be privileged to be interviewed and for their opinions to be heard by the researcher.

In sum, the research participants and interview respondents were informed at the commencement of the research that confidentiality and anonymity will be taken into serious consideration in the research process, and participants' consent was sought for prior to inclusion in the interview list. The researcher also made plans and formalised signing of a confidentiality agreement.

3.6 Data Analysis

Qualitative data analysis involves systematic and rigorous consideration of research data so as to identify useful themes and concepts which will contribute to an understanding of the social life by the researcher (Gilbert, 2001). Though Cassell and Symon (2004) suggest that grounded theory is highly recommended in organisational research as it produces the description of organisational reality, it was not used in this research because of two main reasons. Firstly, themes had been created a priori from the review of literature and identification of the research gaps. Important characteristics were identified, and the research question was formulated. Secondly, due to the interpretivist nature of the research approach taken and the epistemological assumptions of the researcher, thematic analysis was used rather that the grounded theory approach to allow for flexibility in the coding of data. This was followed by an analysis using the QSR Nvivo software. Both stages of data analysis are explained below in what follows.

3.6.1 Thematic Analysis

Gibson and Brown (2009) suggests that all research is motivated towards exploring certain specific issues mostly formulated in the form of research questions. Boyatzis (1998) points that irrespective of the epistemological and ontological assumptions of a researcher, thematic analysis can be used as an approach to help guide data analysis. Gibson and Brown (2009) contend that thematic analysis involves bracketing out details of the experiences of the respondents in a research setting. Themes are key aspects of qualitative research and the word '*thematic'* relates to searching for aggregated themes within data. Thematic analysis represents the process of analysing research data according to relationships, commonalities, and differences across data set (Gibson and Brown, 2009). In the same way, Denzin and Lincoln (2000) define themes as abstract constructs which researchers can create before, during or after data collection. They suggests that a review of the literature alongside the

personal experiences of the researcher through participant observation are rich sources of themes. Themes then provide ways of linking different experiences and ideas together while allowing for merging of interrelated examples and features from data. The thematic organisation of data is a theoretical and conceptual issue which cannot be codified or grouped into specific rules of practice, it involves storytelling; themes subsequently become very useful devices for narratives (see Gibson and Brown, 2009). Gibson and Brown (2009) identified the examination of commonalities, examination of difference, and examination of relationships as the three major aims of thematic analysis. Important requirements which researchers must bear in mind include those associated with reflexivity, approaching the topic from a different perspective, and the richness of the description to be produced from the data (Cassell and Symon, 2004).

Further, the distinctive resource used in thematic analysis is codes. Cassell and Symon (2004: 257) suggests that *"…a code is a label attached to a section of text to index it as relating to a theme or an issue in the data which the researcher has identified as important to his or her interpretation.*" A code is essentially a category that captures a general feature of data and pertains to a range of examples within the data drawing attention to commonality *within* the data set (Gibson and Brown, 2009).

Though the researcher recognises the disadvantages associated with the use of thematic analysis, such as a lack of succinct literature as compared to grounded theory or discourse analysis which can leave the researcher unsure of the process of analysis, thematic analysis has a number of advantages that are beneficial as a means of preliminary analysis of transcribed interviews. Thematic analysis as a method of data analysis was adopted for two main reasons. First, the research draws on multiple areas of organisational studies: the organisational culture literature, as well as the middle management, and the organisational

ambidexterity literature. Second, thematic analysis was used as a form of preliminary investigation of the data because the research data was gathered from multiple sources including from interviews, participant observation, and documentary reviews.

Specifically, similar to the method employed by Pratt et al., (2006), the researcher created provisional categories and first-order codes. The researcher subsequently identified statements which the respondents made regarding their behaviours via open coding and identified commonalities in the statements which allowed the formation of the first order codes. The second step employed involved integrating the first-order codes and creating theoretical categories. Codes from the data were further consolidated and summarised to suit each theme. The third step involved delimiting theory by aggregating theoretical dimensions. The researcher looked for dimensions fundamental to these categories in an attempt to understand how different categories fitted together into a coherent picture. Further, the different experiences and ideas were linked together while allowing for merging of interrelated examples (e.g. Boyatzis, 1998).

The process of code development was characterised by several revisions of the accumulated data. The interview transcripts were read repeatedly and based on the responses to the research questions, the codes were merged. Questions such as *"What values do you hold in high esteem?" and "how does these values influence your behaviours?"* were asked to understand what managers actually valued and how these influenced certain decisions they made on the DAX 4 and the Optimus projects. Responses from these questions were coded and aggregated under the theme cultural resources. Questions such as *"as the project continued were you more inclined to established approaches or to experimenting?"* and *"how did you balance efficiency and flexibility?"* were asked to understand how the middle managers behaved ambidextrously. Responses to these questions were also coded under the

pre-defined theme of ambidextrous behaviours. The full interview guide is presented in much more detail in the appendix (appendix D).

3.6.2 The use of QSR Nvivo 10 and the Coding Process

Cassell and Symon (2004) suggest the use of NUD*IST and QSR NVivo to assist in the organisation and examination of data. QSR NVivo is designed to approach qualitative analysis as researchers do. An early step is usually the coding of relevant parts of research documents or transcribed interviews (Bazeley and Richards, 2000). NVivo will store these as nodes that can be explored, organised or changed.

After the preliminary data analysis through thematic analysis, the researcher utilised the QSR NVivo software to analyse the research data and specifically the transcribed interviews. The QSR NVivo 10 data management software was used to refine and improve the initial manual coding process facilitated through thematic analysis by engaging in a process of an in-depth and systematic coding procedure. Some scholars criticise the use of software in qualitative studies, e.g. Tesch (1990) and Burton (2000). Tesch (1990) believes that the use of software in qualitative studies leads to a loss of the relationship of the researcher and the data. Burton (2000) suggest that the research can lose sight of the ends and purpose of the data analysis (see Bollbach, 2012). Scholars such as Coffey et al. (1996) also express some reservations on the use of software programmes such as QSR NVivo arguing that this method of sorting research data attracts some disadvantages. However, QSR NVivo was used in this thesis due to its numerous advantages. Some of these advantages have been highlighted in extant literature and include the ability to link, annotate, create relationships, and the ability to reshape and reorganise the coding and node structures quickly and easily (e.g. Weitzman and Miles, 1995). Moreover, when the scale of the research data generated from the interviews was put into consideration, the initial manual coding through thematic analysis alone seemed

to be insufficient (as described in section 3.6.1). Also, because of the repetitive nature of the data analysis, manual data analysis alone would have made procedures like regrouping or modification of codes within an advanced stage of data analysis very cumbersome (see Bollbach, 2012). Thus, the researcher imported the transcribed interviews and coded them using the QSR NVivo 10 software. This software allowed the researcher to store and retrieve the research data, as well as facilitated efficient coding, linking, and data sorting (see Barzelay, 2007).

Once all the interviews had been coded through the use of the QSR NVivo software, the researcher undertook an in-depth cross-case analysis of the responses of middle managers on the DAX 4 and the Optimus projects to examine commonalities and differences (see Bollbach, 2012). Cross-case analysis aims to explore patterns across cases and deepens understanding and explanation (see Miles and Huberman, 1994). By comparing the research data generated from interviews on each project separately, it became possible to understand the perception of the middle managers regarding the phenomenon being studied. Some of their responses were similar across both projects, while there were some identifiable differences. These are discussed in the findings chapter (chapter 4).

Additionally, Miles and Huberman (1994) argued that it is expected that redefining or discarding some themes and codes will be part of any research process; this had been the case in this thesis. As the research progressed and in the course of data collection, analysis and interpretation, as well as review of more literature, the pre-defined themes were modified, deleted or eliminated completely, or merged. The use of QSR NVivo allowed the researcher to remove unrelated data from further analysis during the coding process. Observations of the shop floors by the researcher revealed that some themes that were not originally included in the interview guide had to be included. Questions regarding those themes were included and

asked in the next phase of the interviews. A theme that was identified during the review of literature, from past research and from the preliminary observation and informal conversations the research had with organisational members was *aligning to plans*. Once the researcher noticed that managers informally spoke about aligning to plans, it seemed useful to inquire about this theme further during the interviews. Other spoke about planning. Aligning to plans and planning were originally coded separately. However, the researcher, after series of discussion with his supervisors later merged these codes and labelled the theme *alignment.* Codes such as adaptability and flexibility were also merged since there was a close relationship between the responses of the interviewed managers.

Emergent themes were investigated in further depth throughout the study while some themes which had been initially incorporated into the interview guide were removed as they had no actual application to reality. Some of these codes were excluded because only few employees spoke about them or indicated that they were important. The use of QSR NVivo allowed the researcher to remove unrelated data from further analysis during the coding process. The details of some of the codes that were excluded are contained in appendix D. This is aligned with Kvale's (1996) argument about qualitative interviews being a craft and depending largely on decisions made during the process.

Also, during the interviews, some questions were altered. For example, the question "*do you relax control systems and encourage mutual adjustment as a means of coordination?"* was altered to "*does Brush have the ability to reorganise its processes as quickly as possible?"* Such adjustments in the order and wording of questions are eligible in the frame of qualitative interviews, as the aim is to gain insights into the subjects' personal views (see Bryman 2004).

Another alteration in the interview guide concerned the language used. Because questions derived from theoretical concepts their perception by some interviewees seemed difficult, as

the initial interviews indicated. Some of these abstract concepts had to be altered or paraphrased in more conceivable terms. For example, terms such as exploitation and exploration were altered to efficiency and flexibility respectively.

Thus, the final research framework was arrived at after an iterative and systematic use of thematic analysis at the beginning (first round of analysis), and using QSR NVivo to confirm, improve or disapprove some of the initial themes (second round of analysis).

To conclude, the final conclusions on the exploratory, exploitative and ambidextrous behaviours of managers as well as the cultural resources which managers picked to enable and justify their behaviours were drawn after conducting the cross-case analysis. This is in line with Miles and Huberman's (1994) recommendation that conclusions should not be drawn too early, but only in the late stages of the data analysis, because causes and effects may not remain the same as research progresses (see Bollbach, 2012).

Summary

In this chapter, the researcher has highlighted qualitative methodology as the research methodology used as this was the most appropriate to achieve the interpretivist research objectives of the thesis, and in answering the research question. The use of qualitative methodology was also based on the perspective of the researcher who deems reality to be subjective and socially constructed. Specifically, based on the underlying epistemological and ontological assumptions of the researcher, thematic analysis was used as the research approach to data analysis. As regards data collection, the researcher got the insider's perspective from the organisation through observations, documentary reviews, as well as 55 semi-structured interviews conducted over a period of six months.

CHAPTER 4

Findings

4.1 Introduction

In the preceding chapter, the research philosophy, research design, approaches to data collection, as well as the approach to data analysis for the thesis were discussed in detail. In this chapter, the research findings are presented. To capture the perspectives offered by the research participants, quotations from interviewed middle managers are presented, analysed and interpreted. The analysis of the data generated from interviews, observation and documentary analyses seeks to address the research question:

How do middle managers draw on cultural resources to shape their behaviours during the orchestration of ambidexterity?

The research interviews focused on two engineering projects at Brush Electrical Machines Ltd: the Optimus project and the DAX 4 project. While the Optimus project was led by middle managers in the transformers business unit, the DAX 4 project was managed by middle managers in the generator division. The chapter begins with a case summary and description of the Optimus project, then the phases and activities on the project is presented. Subsequently, the case summary and description of the DAX 4 project is presented. This is followed by an explanation of the phases and activities on DAX 4 project. In section 4.4, through a cross-case (project) analysis, the findings of the research in respect of the behaviours of middle manager are presented relative to exploitation, exploration, and ambidexterity. In section 4.5, the findings of the research in respect of the cultural resources middle managers drew upon to enable their actions and behaviours identified in section 4.4 are presented.

4.2 Case Summary of the Optimus Project

The main purpose of the Optimus project was to improve the competitiveness of the transformer business segment, as well as to save the segment from collapse. Feedback from

Brush's customers suggested that both the 132kV and 33kV transformers were too expensive, too heavy and not efficient enough. Brush employees also agreed that in terms of their competitors, on the transformer side, the organisation use to lose out a lot to their competitors, and more than they should do. A reason for this was because Brush did not offer the range of products that their competitors offered. They had a certain niche in the market, but had limited orders coming through for that specific type of product. Also, they had a poor reputation and lots of warranty issues, but recent figures are indicating that those warranty costs have been slashed significantly.

The transformer business segment was faced with severe competition prior to the commencement of the Optimus project. Their main competitors include ABB and Siemens, with increasing competition from abroad, for example, from Spain and Italy. The increase in competition alongside other economic related issues necessitated the need for the Optimus project. Some of these economic issues included the tightening of budgets, low switching costs for customers, cheaper production by competitors; the net effect being that the gross margin is compressed.

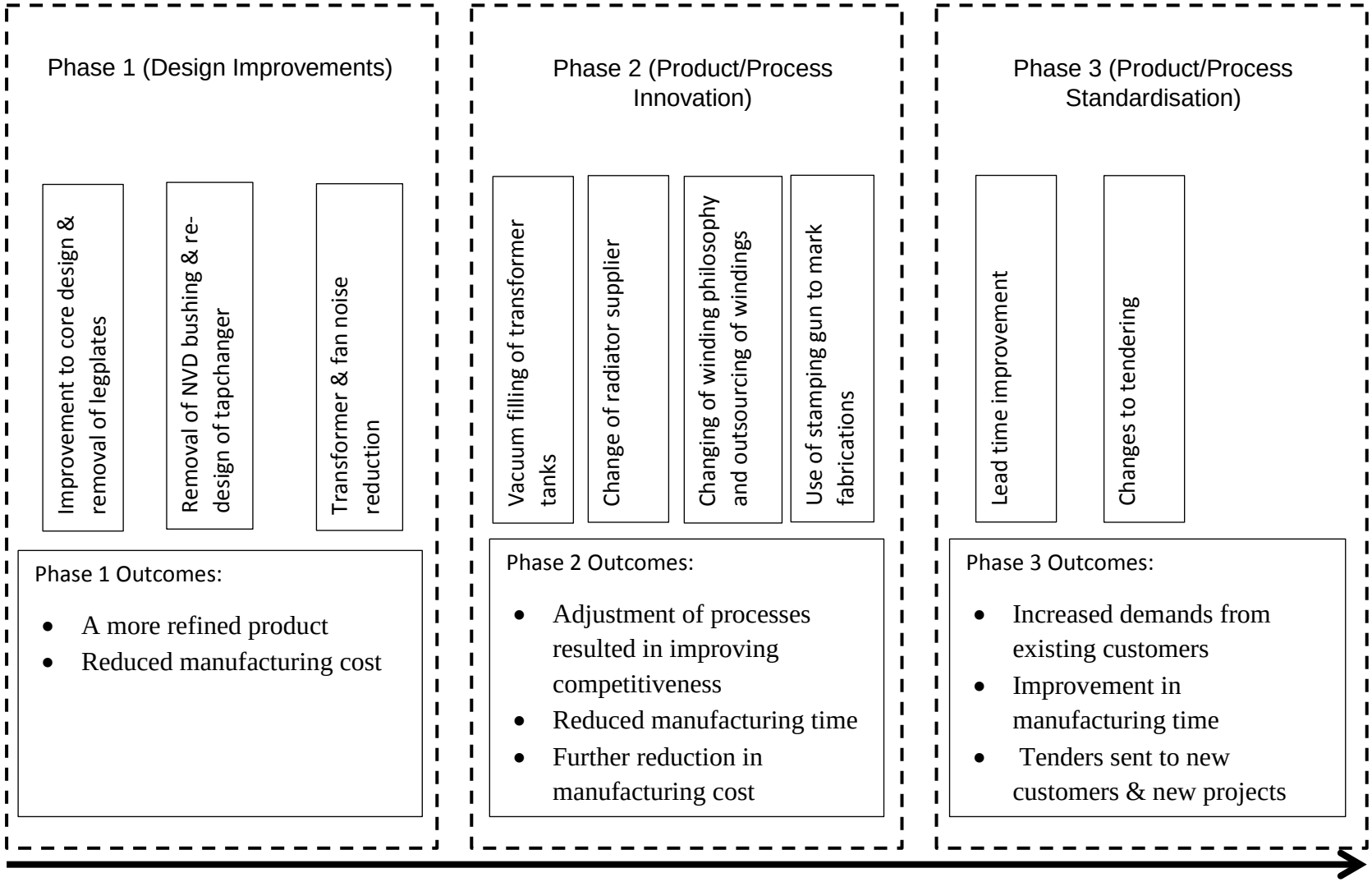
During the course of the project, the strategy of the project was adapted to focus on another range of the transformer product (the 33kV Power Transformer). Other initiatives which were not planned were also included and implemented on the project. The structure of the team was also adapted. Additionally, the Optimus project had some pressing challenges when it started. The Optimus project is built within the lean strategy, this caused some challenges. This lean strategy was created to reduce waste, improve efficiency and ultimately improve the profitability of the business. But some of the employees suggested that this historic lean strategy did not really have any support or emphasis put behind it, necessary resources were not made available and it failed.

To conclude, the objective of the Optimus project was to make the transformers smaller, cheaper and make the organisation more competitive. They looked at reducing the size of the 132kV transformer by 20%, reducing the cost by 20% and or increasing the margins by a good percentage. They had a strategy at the beginning, but over a period of two years, the strategy of the Optimus project changed for the benefit of the business. The goal of what they were trying to achieve was the same, to be more competitive, but they extended the strategy of the project to cover another product (i.e. the 33kV Power Transformer), as well as realise unplanned process and product improvement on both products. Some of these improvements were planned and strategically included in the project charter while other realised improvements were outside the scope of the strategy for the project.

4.2.1 Phases and Activities on the Optimus Project

The Optimus project was divided into three phases. The first phase focused on design improvements of the transformer product. The second phase focused on product/process innovation, while the third phase focused on product/process standardisation. Activities orchestrated during each of the project phases were done simultaneously. The activities of managers and their orchestration of exploitation, exploration and ambidexterity and the outcomes are summarised in the diagram below, subsequently, the findings from each of the three phases are presented in what follows.

Table 8: Optimus Project's timeline.



4.2.1.1 Phase 1: Design Improvements

The Optimus project commenced by middle managers coordinating the project's team towards implementing value added/value engineering initiatives according to a project strategy. Some design/process improvements which had already been investigated on the 132kv transformer product were being implemented. Through market scanning, middle managers uncovered that some of these 'new' improvement initiatives had already been undertaken by competitors over the last 5 years, putting Brush at a disadvantage, evidence by degradation of market share. The main activities of middle managers in response to this competitive pressure are presented below.

Improvements to the Core Design and Removal of Legplates

Part of the activities which middle managers orchestrated during the first phase of the project included an improvement to the core design of the transformer product as well as the removal of legplates. The motivation behind this activity was to contribute to the strategic objective of achieving 25% return on sales by 2014 and 30% return on sales by 2015 by the tranformer business unit. Another motivation was to modernise and enhance the performance of the transformer product. Middle managers guided this activity by reducing the quantity of steel to be used in manufacturing the transformer product. This resulted in a reduction of manufacturing cost by £1636.

Improvement to the core design was done simultaneously with the removal of legplates from the transformers. The legplates were removed after a middle manager suggested that they were unnecessary and would not affect the performance of the transformers in any negative way. Once this product improvement was complete, it was tested, passed and subsequently incorporated into the production process as well as documented in the instruction to produce manuals.

Removal of Neutral Voltage Displacement Bushing and Re-Design of Tapchanger

Another design improvement activity which middle managers coordinated during the first phase of the Optimus project was the removal of the neutral voltage displacement bushing and the re-design of tapchangers. It was evident that Brush's production method had become obsolete and rather expensive relative to competitors. So the motivation was to modernise the transformer product and make Brush a more competitive manufacturing choice in the transformer industry. Four units of transformers were re-engineered to remove the bushings and this resulted in savings in the region of £8000 per unit. A similar activity facilitated by middle managers in the first phase of the project was the re-design of the Tapchanger to achieve 100,000 hours of operations without maintenance.

Transformer and Fan Noise Reduction

Transformer and fan noise reduction was a non-routine activity orchestrated by middle managers during the first phase of the Optimus project through experimentation of new approaches. Investigations were carried out to sufficiently reduce the core noise of the transformer. The purpose of this was to be able to use a lower grade of steel, which is cheaper and thus increase efficiency. With the core noise reduced sufficiently, a lower grade of steel could be used for production. Middle managers on the Optimus project also facilitated a fan noise reduction investigation. This design improvement (tested and passed) added an estimated £1500 to the transformer cost, but could be offered to customers as an option.

4.2.1.2 Phase 2: Process/Product Innovation

As the Optimus projects continued, the trajectory of the project changed due to customer requirements. A major customer (Western Power Distribution) requested changes to the core of the transformer products. This, alongside the senior management's willingness to expand

the scope of the Optimus project necessitated a refinement of the strategy for the project. A new Operations Manager and a new Chief Electrical Engineer were recruited to the transformer business unit with both contributing to the Optimus project. These positions are middle management roles and both roles were filled by engineers who were recruited from competing firms. Both managers had already undertaken product and process innovation on similar transformer products in their previous employment. The activities which middle managers facilitated during this phase are presented below.

Vacuum Filling of Transformer Tanks

Vacuum filling of transformer tanks was one of the product/process activity which middle managers orchestrated on the Optimus project after the appointment of the new Operations Manager. The motivation behind this activity was to build quality into the production process, to eliminate or reduce defects, as well as reduce the lead time by 2-5 days. This was a major shift from the historic production process which had been in place since the 1970's, as such front-line operators had to be trained on an on-going basis.

Change of Radiator Supplier

This involved investigations into the use of aluminium radiators. The initial investigation and experimentation with new approaches showed estimated reduction in weight by 55% as compared to the previous radiators. The amount of oil in the radiator could also be reduced by 55%. Due to the above, the radiator supplier was changed and the average saving was £1232 per transformer. The new radiators were subsequently ordered and stocked.

Change of Winding Philosophy and Outsourcing of Windings

In response to a major Italian customer, a new design philosophy was implemented to exploit the external experience of the Chief Electrical Engineer. The change was implemented to reduce the cost of production and labour, and in turn make tendering more competitive.

Once the winding philosophy had been changed, there was an increase in demand from customers. Middle managers asserted that the initial plan included on the project charter was to manufacture all the parts in-house at the Brush factory, but the increased customer demands resulted in an increased pressure on processes and the manufacturing delivery dates which meant that they could no longer cope. Middle managers proposed to the senior management that some production should be outsourced, which was agreed upon by the senior management team. The effect of outsourcing the windings was improved bottom-line benefits in terms of profit and cash flow. The result of this process adaptation was savings in the region of £3500 on each transformer product.

Use of Stamping Guns to Mark Fabrications

This marked a change from the old method of production to the use of stamping guns to mark fabrications. The motivation behind this activity was to eliminate an unsafe process and minimise injuries to the operators. Specifically, this process change eliminated the risk of striking fingers of the operators which usually led to operators taking two weeks off work and thereby disrupting the production schedules. Stamping guns were delivered to the fabrication shop and training for all front-line staff was completed. The estimated saving for this process improvement was £19.11 per fabrication.

4.2.1.3 Phase 3: Product and Process Standardisation

The major reason for the standardisation of the processes and materials used in the manufacturing of the transformer product was to be able to stabilise the production schedule as well as reduce variability in production. During this phase, there was an increase in demand from existing customers as well as tenders won from new customers.

Lead Time Improvement

As the project progressed, there was on-going brainstorming for new ideas and fine-tuning of the adjusted processes. One major activity during this phase which middle managers orchestrated was the standardisation of the processes to improve the manufacturing time. This involved engaging in multiple activities and implementing changes from some of the old processes to the new processes. The alignment of the different processes such as transitioning from the old production process to the new production process involved the purchase and stocking of new production materials. A motive behind the lead time improvement was to make Brush a first choice manufacturing location as well as to reduce the cost of poor quality production by 20% year on year after standardisation.

Changes to Tendering

Activities within this phase of the project included an alignment of the costing program for each range of transformer as well as identifying the standard cost for the manufacturing or production process. The tendering systems also had to be changed to accommodate the improved features of the transformer products. Though the selling prices for the 132kV transformer and the 33kV transformer remained the same, there were changes in the tank volume, transformer total weight, the amount of oil needed, as well as the steel and copper needed for production. Importantly the group margin increased from 24.1% to 38.2% for the 132kV transformer product and from 23.2% to 30.1% for the 132kV transformer product (see appendix I).

4.3 Case Summary of the DAX 4 Project

At the end of 2011, the management at Brush decided to launch the DAX 4 project. The objective was mainly to make sure that the DAX 2 product was market ready for the next 20 years. Being market ready as in taking into account the changes that their customers will make in their turbine manufacture and how Brush's generator products will react to those

changes. Brush was looking to improve the DAX 2 product in terms of an increase output for a given frame size, a lower noise level, a small foot print and a smaller weight limit. It should be noted that the generator division of Brush has a strong reputation in the marketplace.

Brush's products development up until the commencement of the DAX 4 project had been very reactive, i.e. customers requesting for little changes in the products. But they decided to be more proactive in 2011 and went out to their customers to ask them what features they expected in the future. Once initial parameters were established, the decision was taken to launch the project. An M Charter was created which got the project development kicked off. The M Charter contained information such as what the project sought to achieve on the long term basis, its justification in the short term, which areas will be investigated, the time frame and the resources needed. This M Charter was signed off by the board in 2011. The official launch of the project was in August 2012.

Further, the DAX 4 project did not focus on developing a brand new range of product, but the development of a range that they already manufactured in order to keep the organisation one step ahead of the competition. For a number of years Brush had offered the smallest package for a given power output. But their competitors were catching up, so they needed to improve and optimise the product so as to be ahead of the competition. The benefit of the refined product for some customers was more flexibility in terms of the products that Brush offers. The size and weight of the product range will be the same but the output will be higher and the product will have a lower noise levels.

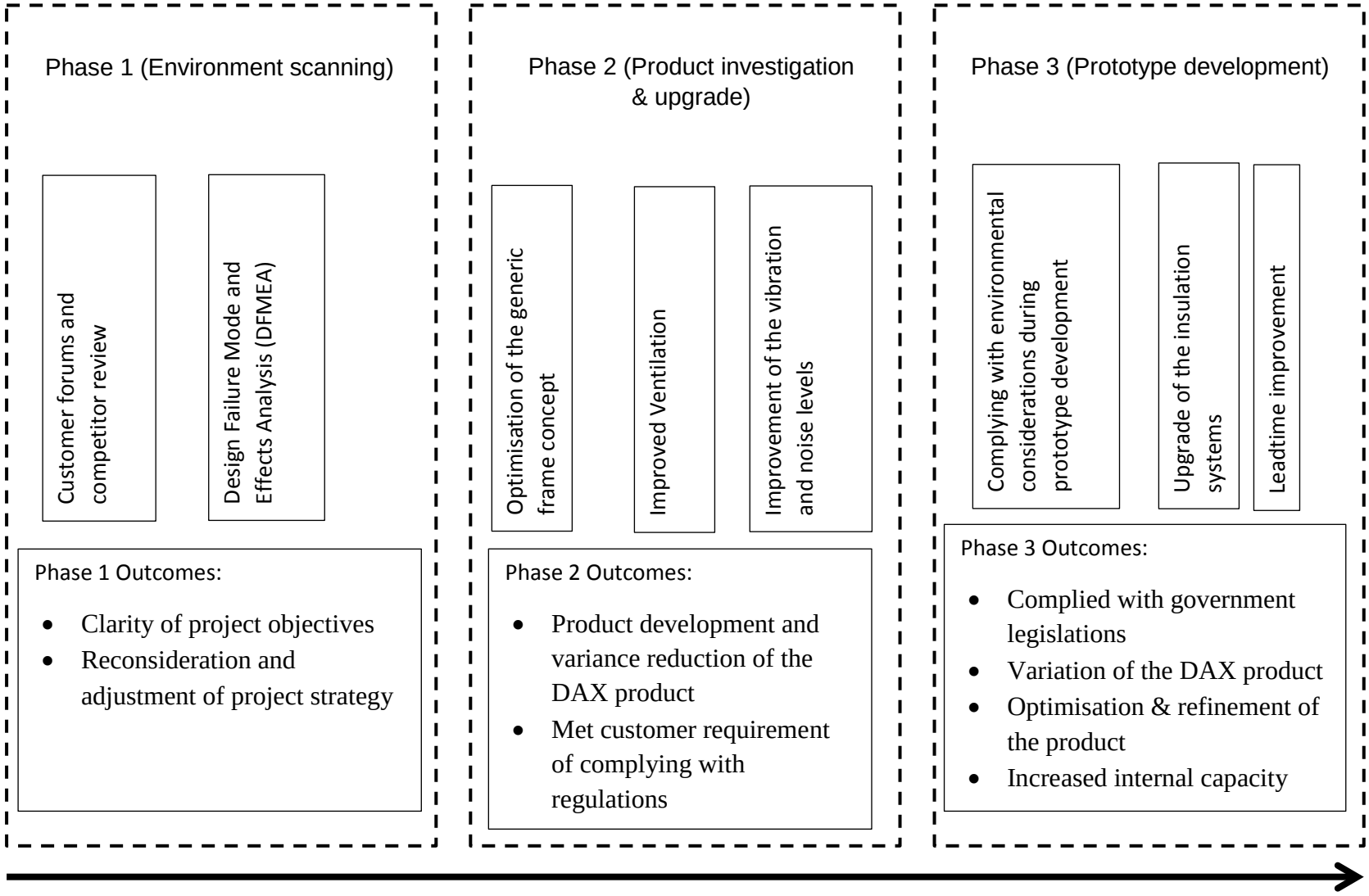
Also in the course of the DAX 4 project, Brush faced some challenges. For example, even though they had allocated resources, engineers who were coming from their established roles took a long time to backfill and were pulled in different directions. This is because there were very few employees who could take on the roles they were leaving to join the DAX 4 team.

Most of the team members had specific skill sets which were highly demanded in the industry. Additionally, they had challenges with the software and modelling tools that had been in use within the Brush business because product development had always been done on an adhoc basis, so the latest software tools needed on the project were not available. So part of the investment was to invest in new computers and the latest software to model the new DAX 4 generator. The phases and activities on the DAX project are presented in the next section.

4.3.1 Phases and Activities on the DAX 4 Project

The DAX turbogenerator was developed in the early 1970's and through continued evolution remains the core product of Brush Electrical Machines. As highlighted in the last section, the DAX 4 project was tasked with further development of the DAX product range. The first phase involved environmental scanning, the second involved product investigation and upgrade, while the third phase involved generator prototype development. Most of the activities orchestrated during each of the project phases were facilitated simultaneously. The activities facilitated during each of these phases are presented below and discussed in much more detail in what follows.

Table 9: DAX 4 project's timeline.



4.3.1.1 Phase 1: Environment Scanning (Customers and Competitors)

The first two months on the DAX 4 project was spent completing customer forums, competitor reviews, and a Design Failure Mode and Effects Analysis (DFMEA). The purpose of these activities was to ensure that there was an adequate understanding of the requirements of the customer base as well as to be able to satisfy their needs through the improved DAX product. The review of competitors sought to understand what the other generator manufacturers had been doing in a bid to improve the Brush's DAX product range. These activities are further explained in what follows.

Customer Forums and Competitor Review

The purpose of the customer forums was to ensure that all the current and future customer requirements were understood before project implementation began. Conducting forums with customers was completed first in a bid to adequately set the objectives and direction of the work to be completed on the project. Initial findings from the customer reviews revealed some specific details which guided the DAX 4 project. For example, sales intelligence suggested that Siemens in particular were under-cutting Brush prices by 15% in a bid to win more business.

Importantly, one major task achieved during this phase of the DAX 4 project was ensuring that the DAX 4 product was significantly differentiated from competitor products whist meeting market and customer requirements. A review of the design decisions taken by Brush's competitors was used as a benchmark for the DAX product and areas where the competitors had taken a different design decision to Brush were identified. This formed part of the assessment used by middle managers on the DAX 4 project to determine what design they should adopt, either the same design philosophy or differentiate itself from the competitor's product.

Design Failure Mode and Effects Analysis (DFMEA)

The purpose of going through a Design Failure Mode and Effects Analysis (DFMEA) was to highlight the key design areas of risk and help focus the early stages of the project. In light of the results of this task that was completed, the initial strategy of the DAX 4 project was revised and adjusted. This took the form of brainstorming sessions with the DAX 4 team and key design stakeholders. Some radical initiatives which could have been implemented on the DAX 4 project were dropped while areas of focus on the project became streamlined.

4.3.1.2 Phase 2: Product Investigation and Upgrade

Once the Design Failure Mode Effects Analysis (DFMEA) had been completed, decisions were taken to proceed to the next phase of the project. This phase involved middle managers facilitating investigations and activities which led to the significant upgrade of the DAX generator. The main activities which middle managers orchestrated during this phase are presented below in what follows.

Optimisation of the Generic Frame Concept

On the DAX 4 project, the project team optimised the generic frame concept to ensure less variation during manufacturing and a more streamlined approach to the design and tendering of the DAX product. The first area that was investigated included an investigation on the current relationship and challenging design margins in a bid to ensure that each frame-size was fully optimised. The current product can be offered with a variety of different stator slots and number of turns on the rotor. The reason behind the variety of stator slots and rotor turns is that they have been created as and when required for specific customer requests, rather than through strategic design choices. On the project, these diverse generic frame concepts were optimised and standardised. But allowances were made for existing customers who had on-going DAX generators being manufactured.

Improved Ventilation

The aim of this product improvement activity is divided into three areas. The first area reviewed was the ventilation fan, the second was the rotor design, and the third was the stator and rotor vents. The current standard DAX product utilises a one-piece fan with fan blades with a fixed angle. The fan blade design which is used on the larger air-cooled and hydrogen-cooled generators has a variable pitch which improves the air circulation around the generator. The suitability of this variable pitch fans was investigated and assessed on the DAX 4 project and was found to be suitable, thus enabling better cooling.

The last ventilation activity which middle managers facilitated was improving the stator and rotor vents. The stator and rotor vents allows transfer of hot air away from the rotor and the cold air from the cooling chambers. A review of the positioning of the vent arrangement was completed on the project to ensure that the stator and rotor are arranged for optimum heat transfer and airflow.

Improvement of the Vibration and Noise Levels

In order to meet the changing customer requirements, a number of design initiatives were reviewed on the DAX 4 project to improve the vibration and the noise levels. Meeting a specific noise criteria is being requested on a more frequent basis as stringent environmental legislations are being enforced. If the noise could be reduced at source, the inherent noise level could be reduced without the need and expense of additional noise reducing measures. This improved both the vibration and noise levels and importantly, met the needs of the main customers. It was suggested that a decision to standardise this design element across the entire range could be taken if it was deemed a critical requirement by the other customers. As regards the vibration, a rounded frame which would give improved vibration was designed, tested, and passed. There was a cost increase from this design upgrade, but middle managers

concluded that this could possibly be passed on to the customers in order to meet their requirements.

4.3.1.3 Phase 3: Prototype Development

When most of the initial objectives of the project had been completed, the DAX 4 project team arranged a second phase customer forum to notify major customers of the improvement initiatives implemented on the DAX product range (e.g. G.E, Pratt and Whitney Power Systems, and Rolls-Royce). Revised technical specifications were received after meeting with these major customers and the scope of the DAX 4 project was adjusted. This adjustment led to some changes to the DAX 4 projects' strategy. The activities orchestrated by middle managers during this phase are presented below in what follows.

Complying with Environmental Considerations during Prototype Development

Once most of the investigations on the DAX 4 project were completed, prototype development was arranged. Third party witnessing was also arranged from time to time to witness the generator development. During the prototype development, middle managers had to ensure that they were in compliance with new government regulations. Changes in government legislations meant that manufacturers of turbo-generators in the power industry had to review all aspects of the turbo-generator package to ensure that environmental requirements were met. Companies were required to prove that the power solutions implemented are more environmentally friendly in terms of the efficiency for fuel usage and the materials used in the manufacturing of the products.

The DAX 4 team ensured that this objective was achieved by ensuring that more of the materials used were recyclable and that the manufacturing processes was less energy-intensive. The outcome of this resulted in Brush being able to demonstrate its environmental credentials and meeting required government legislations.

Alongside developing a standard generic prototype, allowances were made for bespoke trailer-set requirements. Allowances were made during the development of the prototype for the DAX product to be able to serve the needs of the customers who needed a less-heavy DAX generator for their trailer-sets. This is to make it cheaper and more effective to transport the turbines and turbo-generators powering them.

Upgrade of the Insulation Systems

The main motivation for this activity was to modernise and enhance the DAX product as well as enter the higher megawatt sector, in response to customer surveys. One of the main benefits of this upgrade was achieving the ability for greater power output for a given fame size (e.g. smaller machines with the same outputs, same sized machines with increased outputs or larger machines with increased output). During peak applications, this would ensure a greater efficiency of the DAX product and mean it is safer to push the machine harder for relatively short periods.

Lead Time Improvement

Lead time is a critical customer requirement for the gas turbine and Aftermarket swap-out applications. Since lead time is a critical factor for customers, middle managers ensured that an improved lead time was achieved in the manufacturing of the DAX generator product. This increased the capacity to offer more manufacturing slots and to manufacture more generators in any given time period for the benefit of the customers. As well as, reduced inventory and work in progress for Brush. Importantly, the motive behind the lead time improvement activities was to improve the overall customer experience.

Summary

In this section, the findings from the various phases and activities on both the Optimus project and the DAX 4 project have been presented. Some of the activities captured on both

projects can be categorised as exploitative related activities while others were exploratory in nature.

The majority of middle managers who orchestrated activities on both projects did so with an understanding of the threats they face from competitors. These middle managers supported the development of the capabilities and processes necessary to compete in new markets and technologies, which enabled Brush to remain competitive in the face of changing market conditions. Through a cross-case (project) analysis, the behaviours which middle managers demonstrated during the orchestration of these organisational activities are presented relative to exploitation, exploration, and ambidexterity.

4.4. Cross-Case Analysis of the Optimus Project and the DAX 4 Project

The DAX 4 project and the Optimus project both commenced with the analysis of the current processes, product offerings, and the organisations major customers, as well as their future requirements. After the initial analysis, the management at Brush created strategies for both projects. During this period, clear objectives and goals which were expected to be achieved over an agreed period of time were identified. The implementation phase for both projects began with the mobilisation of resources and man-power towards the realisation of the goals and objectives which had been clearly set out. This involved the re-adjustment of teams and structures to allow for the facilitation of the day-to-day running of both projects. Most of the middle managers on both the DAX 4 and the Optimus projects had other organisational and departmental objectives to meet asides their contribution to both projects. So their project roles were additional to their already busy schedules.

As time passed on both projects, some changes were introduced that altered the trajectory of both projects. These changes were mainly due to customer re-specification and requirements. In the case of the Optimus project, a new Operations Manager and a new Chief Electrical

Engineer were recruited from competing firms; this seemed to be a strategic move by the senior management. With the experience of these two engineers, the scope of the Optimus strategy in particular was extended, as such a lot of unplanned changes were implemented over the course of the project.

On both projects, middle managers demonstrated exploratory, exploitative and ambidextrous behaviours. Consistent with the findings of Mom et al. (2007, 2009), whereas some of the interviewed middle managers demonstrated high levels of exploratory behaviours as compared to exploitative behaviours, or the other way round, other interviewed middle managers demonstrated high levels of both exploratory and exploitative behaviours i.e. ambidexterity. These behaviours were enabled by managers selecting diverse cultural resources from the organisations cultural toolkit. Importantly, from the interviews conducted and from the researcher's observation of the organisational processes on both the Optimus project and the DAX 4 project, a number of similarities were evident when comparing the exploratory, exploitative and ambidextrous behaviours of middle managers. The behaviours which middle managers exhibited on both projects are presented in what follows.

4.4.1 Middle Management Exploitative Behaviours

The identified exploitative behaviours capture the collective actions, conduct and attitudes demonstrated by middle managers on a day to day basis on both the DAX 4 and the Optimus projects. Research suggests that exploitation includes such things as refinement, production, efficiency, implementation and execution (March, 1991). Middle managers who were working on both projects were responsible for leading refinement activities on both projects. Specifically, two exploitative behaviours of middle managers were identified. These behaviours include alignment, and guiding refinement. Consistent with Pratt et al. (2006) three major steps of analysis were followed:

Step 1: Creating provisional categories and first-order codes - This step involved using open coding to identify informants' quotes about their aligning and adapting approaches and then drawing on common statements to form provisional categories and first order codes.

Step 2: Integrating first-order codes and creating theoretical categories - This stage of analysis allowed the researcher to create theoretical categories by comparing the empirical data across middle managers in different SBUs.

Step 3: Delimiting theory by aggregating theoretical dimensions - Once theoretical categories had been generated, the researcher looked for dimensions underlying these categories in an attempt to understand how different categories fitted together in a coherent picture.

An overview of the data structure is presented at the end of the section in figure 5. This overview captures some exemplar quotes, the identified theoretical categories and the aggregate theoretical dimension in this chapter. What follows is a detailed presentation of the findings on middle management exploitative behaviours.

Alignment

Consistent with the assertion of Floyd and Wooldridge (1992) who suggests that the primary role of middle management is the implementation of strategy, the data presented below suggests that middle managers worked towards the implementation and realisation of the strategy of the Optimus and the DAX 4 projects. Implementation began with creating plans which had to be carefully orchestrated.

Specifically, during the three phases of the Optimus project, middle managers demonstrated an alignment to the strategy of the project and ensured their teams were aligned too. During the first phase, some of the interviewed middle managers described how they prepared for the implementation of the project by creating *"road maps"* right from the outset. They explained

how they started, the challenges they had and the successes achieved during the course of implementing the project. When the project started, most of the middle managers had an understanding of what the goal of the Optimus project was and there was support for it. Thus middle managers demonstrated support for the strategic initiatives of the project as well as aligned themselves and their teams to the realisation of the project's objectives. As an example, the Chief Electrical Engineer noted that:

> *"I oversaw the daily operations and had team managers in place working with me. We worked by planning ahead and getting ready for what we needed to be doing. So a big part of my duty was to plan ahead."*

Similar to the above, the Engineering Resource Manager who worked on the Optimus project emphasised that:

> *"We started with good preparation. When we started, we had the end result in mind, which was customer satisfaction and us making a profit. If we don't make a profit, we are just busy fools. So we organised and got into a planning phase before the projects started. We understood the technical implication and put the adequate means in to implement the tasks. We were always forward-thinking. If we start planning something today for today, then that's too late. You need to have a radar set so that what happens in the next three months is already thought of. From a point of customer satisfaction, we are already looking at three months ahead."*

This suggests that middle managers had a short-term orientation and had plans in place to achieve the objectives of the project in the short term. Positioning this vis-a-vis existing works, it may be argued that this is similar to Birkinshaw and Gibson's (2004) definition of alignment whereby managers have a clear sense of how value is being created in the short

term and how activities should be coordinated and streamlined to deliver value. There was also evidence which suggests that middle managers aligned to the strategic plans of the Optimus project and worked towards its realisation. The Chief Insulation Engineer noted that:

> *"We worked to a planning schedule. Every day we went through every single plan and every component where we were on the project. So really we did a review each morning, made sure that there's nothing at risk and everyone knows what they've got to do."*

Corroborating the assertion made above, another informant, the Mechanical Design Engineer speaking about his team working on the Optimus project narrated that:

> *"They're all aligned to do the same thing. We have to be. They do understand that we need to deliver on time, get better products. They do understand the longer vision that the company has."*

Moreover, the middle managers who were coordinating the project typically had weekly reviews with the Managing Director and the Engineering Director. Discussions centred on what they were trying to achieve on the project as well as the improvement initiatives which were being implemented. Other progress reviews and meetings centred on other new initiatives, as well as non-feasible initiatives, and their consequences on the business unit. Asides meetings with the senior management, the middle managers on the project also met their respective teams regularly. The researcher observed some of these team meetings and constantly took note of informal discussions between middle managers and their teams. During the meetings, middle managers took the time to explain the objectives of the project to their teams and encouraged front line operators to fully commit to the project.

Similarly on the DAX 4 project, middle managers also aligned themselves and their teams to the realisation of project objectives. When the DAX 4 project started, the Operations Manager attended a briefing as part of a three day course. At the briefing, the strategy of the project was discussed as well as how the project contributes to the organisational strategy for the next three years. Once the briefing was concluded, he described how he communicated the DAX4 project's strategy to his team to get the required backing and support:

> *"So I've come on a course and that's the first time I've ever seen the MD's strategy, because my previous boss never explained it to us, or even showed us. So once I'd got that, the Learning and Development Manager said, "Well now you've been on this course what are you going to do Mr Manager? What's one of your objectives?" I said, "I'm going to tell everybody in my team what the strategy is and the mission, because I think that's the right thing to do". So I did. I displayed all the competencies and the mission, the triangle, our objectives in my areas so they all know, everybody, and we worked towards it."*

One of the key middle managers (the DAX 4 Mechanical Engineer) also commented how they aligned to the objectives of the DAX 4 project:

> *"At the beginning, we went through the project objectives, did the individual appraisals, and set out the tasks for each person on the project. It was important that everyone understood what we were trying to achieve, because without an understanding, our efforts may be wasted. Now, everybody knows what the end target is, and we are working towards the goal. We all know where the business needs to be. We are making sure that everything is done on time and in the most efficient way."*

This was supported by the Continuous Improvement Manager and a Project Manager highlighting how middle managers aligned to the strategic plan of the DAX 4 project. They noted respectively that:

> *"The overall strategy is to make money and make the company more profitable and to keep the company going to make sure we all have a job. So the driving force is there, I just sometimes make my team aware of it by straight talking on the project and giving a good explanation of why the project is being done."*
>
> *"Yes I understood and bought into the strategy because I had an input into it. It is a SMART objective. It is strategic, measurable, it's time bound, we don't have a long huge list of them, there are some really quick objectives and we have communicated to the people whom we work with, and they all understand and that's why it's been bought into. It is important that I demonstrate an understanding of the bigger picture within the organisation on every project, just like this one."*

The data extracts emphasise how middle managers aligned to the plans of the DAX 4 project and encouraged their teams to work towards the realisation of the project's objectives too.

In summary, on both the Optimus and the DAX 4 projects, middle managers demonstrated the behavioural capacity to plan ahead and align to the existing strategic plans of the projects as well as encourage their teams to align also. One major difference between the behaviour of managers on both projects was that while most of the DAX 4 project managers fully demonstrated an alignment to the strategic objectives of the DAX 4 project, some middle managers on the Optimus project were a bit reluctant to fully support or commit to the strategy of the Optimus project.

Guiding Refinement

The improvement of the core design and the removal of legplates demonstrate exploitative routinized activities of middle managers during the first phase of the Optimus project. During the interview sessions, some middle managers shared their views on how they guided these activities on the project to ensure that the initial objectives of the projects were realised. These activities involved middle managers ensuring that the *'road maps'* which had been initially created for the projects were adequately followed. This was achieved by ensuring that the strategy of the project was properly coordinated and implemented. Floyd and Wooldridge (1992) and Currie (1999) both suggest that middle managers are responsible for monitoring activities to support senior management objectives as well as translating organisational goals into action plans when implementing deliberate strategies. Additionally, they suggest that middle managers are responsible for selling top management strategies to subordinates lower down the organisational hierarchy. The data presented supports this coordination by middle managers evidenced through their ability to network with other managers in order to ensure that the processes for the project were linked and the objectives realised. Middle managers also guided activities by ensuring that their existing knowledge and competencies were adequately deployed.

Specifically, speaking on how these initial design improvement activities such as improvement to the core design and the removal of NDV bushing were orchestrated, an Engineering Project Manager noted that:

> *"The transformer was too expensive, too heavy, and not efficient enough, this is what we were getting back from our customers. So we looked at reducing the size by 20%, cost by 20% and or increasing the margins by a good percentage. We went about it in such a way of looking at key components. The core was nowhere near optimised, so*

we increased the fill of the active section, and reduced the amount of copper, and reduced the tank size, and worked through the design processes, and worked with the suppliers too. There were hurdles in that we had to agree the design and sizes, agree the testing, and do it as a continuous process. We identified where we can improve the core design and we did the testing process which enabled us to bring down the size of the unit. Also regarding improvements to the core design, we have improved the design, this saved on average 1.3% off the cost of the transformers."

Similar to the above, the Operations Manager for Manufacturing who also guided the various refinement and improvement activities during the three phases of the project noted that they usually had a series of meetings where visual control boards were used to explain the current phases of the project as well as the objectives to be achieved in the coming weeks. He highlighted that:

"I used visual controls and normally actually got up and involved the team in discussions and decisions that we needed to make. We usually had meeting around the project control board."

Similarly on the DAX 4 project, some of the interviewed middle managers explained how they orchestrated activities during each of the phases of the project. They narrated how they directed the refinement and improvement of the DAX generator product, as well as how their processes and competencies were improved. During one of the interview sessions, the DAX 4 Mechanical Engineer noted that:

"We had weekly meeting and if there is anything new, we always brought it to the discussion. We had a transformation time-line which mapped out all the different objectives. Ventilation, insulation and manufacturing are examples of a few things

that we looked at. We had team objectives and individual objectives so people understood what was required of them and we assisted in achieving these objectives."

O'Reilly and Tushman (2004) suggests that to flourish over the long run, organisations need to constantly pursue incremental innovations, small improvements in their existing products and operations that let them operate more efficiently and deliver even greater service to customers. The findings of this research confirm that middle managers were responsible for guiding the improvement activities on the project. Evidenced from the interviews, middle managers narrated how they achieved the tasks and process improvements on the project through encouragement of their teams as well as through coordination of the improvement activities.

The data presented above seems to be consistent with the assertion of Floyd and Wooldridge (1992) who argue that strategy can be described as an integrative pattern which requires coordinated activities that support a coherent direction.

Summary

Alignment and guiding refinement were two exploitative behaviours demonstrated by middle managers during different phases of both the Optimus and the DAX 4 projects. These behaviours were mostly visible during the improvement to the core design and the removal of legplates (first phase of the Optimus project) as well as during the optimisation of the generic frame concept and the improvement of the ventilation (second phase of the DAX 4 project). Not only did middle managers guide activities relating to elaboration of their existing beliefs, they also assisted in improving the existing competencies, processes, and the refinement of the transformer and the generator products however small the improvement may have been. These two exploitative behaviours of middle managers were justified by some elements of the organisational culture conceptualised as cultural resources. These cultural resources

which will be discussed in details in section 4.5.1 includes improving product efficiency and process effectiveness, and cautious improvisation. The overview of the data structure and findings in this section is presented below in figure 5. Exemplar quotes are initially presented. This is followed by the theoretical categories (alignment and guide refinement) and subsequently the theoretical dimension which is exploitative behaviours.

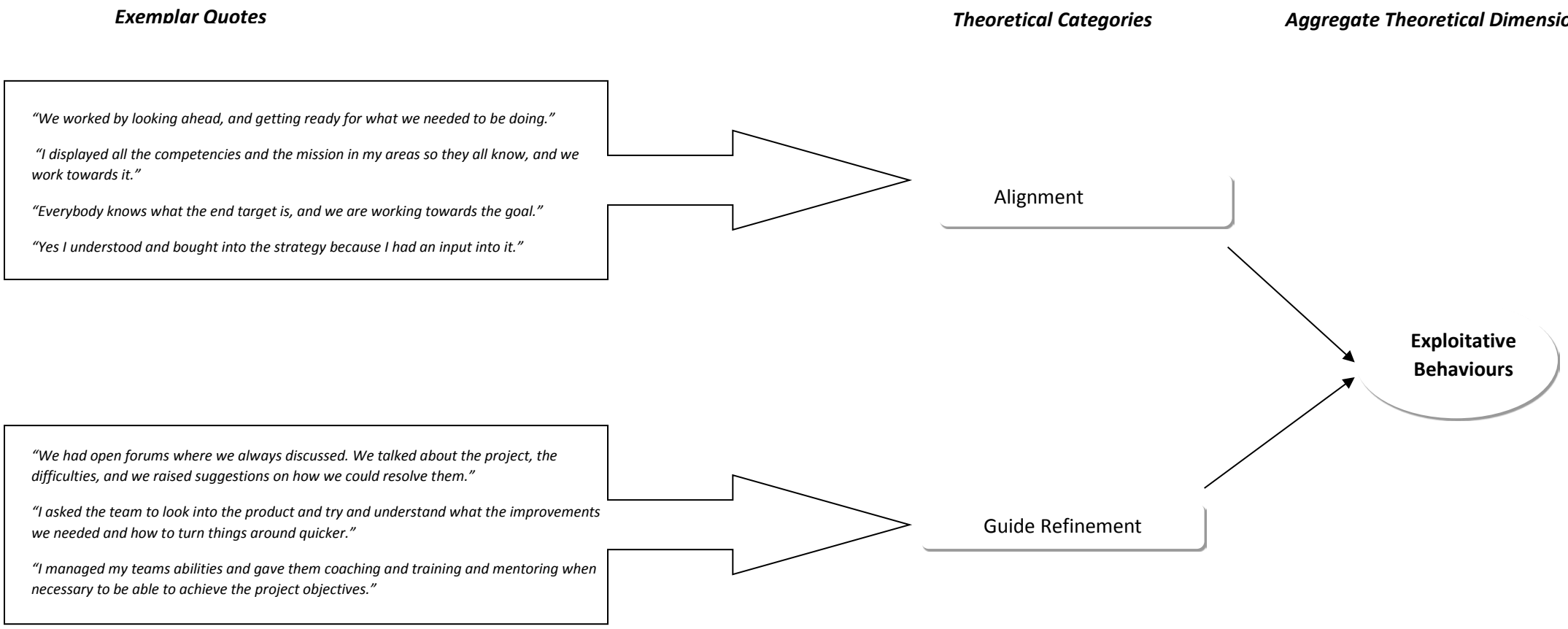


Figure 5: Overview of Data Structure for Exploitative Behaviours.

4.4.2 Middle Management Exploratory Behaviours

Research suggests that exploration includes things captured by terms such as search, variation, risk taking, experimentation, flexibility and innovation (see March, 1991). In this section, the identified exploratory actions, conduct and attitudes demonstrated by middle managers on a day to day basis on both the DAX 4 and the Optimus projects are presented. For many interviewees, as both projects progressed, there was less emphasis on aligning to the strategic plans of the projects. Specifically, the behaviours demonstrated by middle managers included innovativeness, adaptability, and leading and encouraging change. These behaviours were also shaped by cultural resources. Some exemplar quotes, theoretical categories and the aggregate theoretical dimension (exploratory behaviours) are presented in figure 6 at the end of the section. The findings on middle management exploratory behaviours is presented in what follows.

Innovativeness

Benner and Tushman (2003) suggest that strategic integration, which involves driving innovation, occurs at the senior team level in organisations. Other scholars such as Fang *et al.* (2010) support this assertion, but what is distinctive about the data presented below is that middle managers can also facilitate strategic integration and encourage innovation. The ability of middle managers to think divergently (see Floyd and Wooldridge, 1992) was demonstrated as the Optimus project progressed. For example, the switch from one radiator supplier to another during the second phase of the Optimus project resulted in further reduction in the cost of manufacturing the transformers. During this non-routine exploratory activity, middle managers demonstrated innovativeness by encouraging their teams to seek new solutions, reconsider the existing process and integrate the new discoveries with existing processes. One of the middle managers who demonstrated and encouraged innovativeness was the Operations Manager (Engineering) who noted:

"I championed innovative ideas by encouraging the engineers. If someone comes to me with an idea, even if I don't think it's a good idea, I always lay out what the idea is, and make a little programme on how it can benefit the company. If I am satisfied, I move the idea up a level to my director and explain benefits."

Some of the interviewed middle managers commented that they got to a stage where they always experimented with new ideas. These ideas had to be verified by the various teams through constant interactions and meetings where they were discussed. They also took non-value added activities out of the production process especially during the third phase of the project where the lead time improvement was a key objective. The Operations Manager (Transformer) who also encouraged innovativeness during on the project asserted that:

"If I see that the idea is better than what we presently have, we implement it straight away. I encouraged my workers to search for new solutions because we always want to satisfy our customers."

Searching for new solutions on the Optimus project is consistent with earlier research which suggests that middle managers not only search for new solutions, but also encourage their teams to do same. For example, Howell and Shea (2001) suggest that part of the roles of middle managers is championing of alternatives to senior management. Championing involves getting involved and motivating other employees to support innovation. Floyd and Wooldridge (1997) also argue that championing alternatives involves middle managers justifying and defining new programmes, searching for new opportunities and proposing such to senior management.

However, innovativeness on the project did not come without its own challenges as some of the employees demonstrated some level of resistance when some of the non-routine activities such as the removal of fans from the radiators were orchestrated. The Chief Electrical

Engineer asserted that though they were innovative, they still had some challenges and resistance from some of the shop floor operators. Some of this resistance and cynicism were negated through demonstration of positive results and by encouragements from some of the managers. He pointed out that:

> *"In the world of Brush, it is a bit difficult to be innovative because some people will say we have done it like this for years. So what we get to do is to prove an idea, and get the right people on board. When we did implement some innovative ideas, we pointed out the costs savings, because there has been plenty achievements both in costs and time. On the project we deliberately encourage the team to experiment within boundaries. Obviously, we have to be careful financially, we have very tight targets to meet. I encouraged them to try new things but to manage risk carefully as well. So if something is high risk then we would be careful. We're not risk averse but cautious. Where we thought something was worth a try, and it's maybe something that's a bit innovative, a little bit different, I always encouraged them to try that."*

So even though there was resistance from some quarters on the shop floor, middle managers tried to negate this by demonstrating the successes they've achieved and by deliberately encouraging their teams to experiment. Also, during the optimisation of the generic frame concept (second phase of the DAX 4 project), some of the interviewed middle managers such as the DAX 4 Mechanical Engineer and the DAX 4 Electrical Engineer respectively describe how they had to be innovative, as well as encouraged their teams to model innovativeness in situations of difficulties or when faced with a challenge. They asserted respectively that:

> *"I encouraged and inspired other employees to be innovative on the project by leading by example, I don't believe in asking them to do what I haven't done, or what I can't do. I tried to encourage people to be innovative, so wherever they can, and if*

they come up with an idea, I usually encourage them to go away and try it, you know the best thing that can happen is that it doesn't work, then we go back to status quo." "If it's a good idea, and we can do it, and we can afford it, I ask for a business case, and we can talk to our senior manager about it and explain why we need to do it. For example because we need to improve a software, its 20 years old, it doesn't support us in breakdown situations, etc. etc. sometimes you don't need a huge page, maybe 2 or 3 pages to present a case. Punchy to the point, very specific, and explain why to the manager to get his buying and then ask him to basically get some budget behind it. Most innovation requires a budget. But I did see a need for innovativeness on the project and I encouraged my team to be innovative."

The Operations Manager (Rotor) also highlights the encouragement of innovativeness. The narrative below refers to the second phase of the DAX 4 project and specifically during the improvement of the vibration and noise level:

"I make a case for innovative processes by first trying to see what it is that my team are innovating on. I get the technical leaders to vet the ideas, and tell me whether it will be beneficial to the department and put it in writing why such an innovation should be considered as part of the project. If all that information is positive we go on, if not, we let them know, but not discourage them from not innovating."

Other middle managers who demonstrated and encouraged innovativeness explained that they used it as a motivational tool. One of the interviewed middle managers for example asserted that:

"I encouraged innovation at every single little area all the time because that's a motivation tool. If you didn't feel like you can be innovative in your job, you may be bored. So I did encourage them to be innovative."

In sum, current research establishes that divergent actions are critically important for long term success of organisations (see Currie, 1999; Pappas and Wooldridge, 2007). Middle managers, by being innovative and encouraging innovation among employees were able to ensure successes on both the Optimus and the DAX 4 projects. Not only did they encourage divergent initiatives and welcomed ideas suggested by the shop floor operatives, they also used this as a motivating tool on both projects.

Adaptability

Middle managers demonstrated and encouraged adaptability on both the Optimus and the DAX 4 projects. This exploratory behaviour enabled by cultural resources was a necessary ingredient for the success of both projects. Floyd and Lane (2000) suggest that middle managers are able to evaluate new information in the context of the organisation's strategy, operations and markets and thereby direct top managers' attention to and understanding of strategic issues. The findings presented below are consistent with these assertions.

Basing judgements on existing and new information, middle managers were able to adjust the strategy of the Optimus project. For example, middle managers described why they had to adapt the strategy of the project and bring on board new initiatives. The Engineering Resource Manager shared his views on why they adapted:

> *"You have to follow the plans. Medium to long term plans are managed to make sure that we achieve our goals. But there are times when the business is flowing and changing where you now have to take a view on how stringent you are with plans. My job is to get things through efficiently, and out on time. Strategic plans should not be an obstacle to achieving certain goals. We sometimes have reasons why certain strategies which are created by management can't be fully achieved, then, we had to adapt."*

Evidently, if middle managers had not behaved in ways consistent with adapting the strategy of the Optimus project, the project wouldn't have been successful. Also, when the winding philosophy had to be changed and the windings subsequently outsourced during the second phase of the project (see section 4.2.1.2), middle managers demonstrated the behavioural capacity to be adaptable. The Operations Manager (Manufacturing) commented on how they outsourced some of the functions (e.g. windings) to streamline the project for the benefit of the business:

> "*…Well, I am changing things, we have changed things. The method that I use to tell me what we need to change is what I call a core competence model. What I do is I look at functions and things that we do, and say, are they a core competence? What do we do? What do we do here? What do we not do? What do we do now that we shouldn't be doing? What are we not? We're not a freight forwarding company, we are not a logistics company, we are not a measurement and control workshop, and we are not a calibration business. So when we went through these things, and we looked at what we do in-house, then we said, should we really be doing this? The answer is no. So what we have done is included that on the Optimus strategy. There are lots of things that we were engaged with that we don't do anymore. We've taken the decision to outsource some functions on the project, and we're currently engaged with that now. That will streamline our processes. It will make us more effective. It will stop our project engineers getting involved in waste. It will lean the process, and we will deliver a better service to our customers."*

From observations and interview data, middle managers exhibited adaptability by adjusting organisational structures. This highlights the importance of exploration activities such as searching for new organisational norms, structures, and systems (e.g. Floyd and Lane, 2000;

Tushman and O'Reilly, 1996; Mom et al, 2007). The Operations Manager (Transformer) discusses how they adjusted structures on the project by moving some employees to other departments:

> *"Though we plan ahead in most circumstances, we are also a bit flexible because this allows us to manage fluctuations in capacity and allocate resource to where it is needed most. In some situations, we usually allocate more people to specific areas and create more capacity to create flow. This is also easily achieved through having a multi-skilled workforce."*

So some shop floor operators were moved to other departments to limit idle hands and ensure that the workforce maintained its efficiency. The Chief Electrical Engineer corroborated the views of the Operations Manager (Transformer) by noting that:

> *"In terms of human resources we've gone through a structural change. Now we are going through another structural change which is going to give us the structure in the right areas to be able to deliver the strategic changes on the project. So the structural changes and the people changes are what helps us to deliver our strategy."*

On the DAX 4 project, most of the middle managers did exhibit adaptability. The DAX 4 Electrical Engineer as an example suggested that:

> *"We try to be as practical as possible, market changes to an extent, we can be very flexible, we can change within a day, either on a project, or a department. Depending on what that change is and the size, it may take time. But on a day to day basis, and specifically on the project, what a customer wants on the field, we can adapt quickly."*

In another scenario, another middle manager explained that they understood and accepted that the strategy of the project had to be adapted at some point for the benefit of the customers and ultimately the business. The DAX 4 Electrical Engineer noted that:

> *"I definitely recognised the need to adjust the strategy and processes on the project. I am always striving to adapt and give the customers the best. This is because if we are not adapting and not giving the customers a one stop solution, they may go somewhere else."*

The DAX 4 Project Manager specifically highlighted that the trajectory of the DAX 4 project changed due to customer requirements. The main customers required generators which had the capacity for higher output. So simulations had to be done and prototypes modelled. The purpose for doing this was to ensure that the design benefits and changes were identified and to ensure that more time was not spent on the test beds during the later stages of production. The quote below highlights this point:

> *"The requirements of the projects have come from the customers, but the areas we were looking at have come from Brush. Customers are conservative so we have to work with them all through the line, to play down the risks. We have had revised specifications from GE, and we have adapted the strategy after we clarified their requirements. If we don't make this change, we are at a risk of losing business and everyone understands this. So we were quite open to changing some certain elements and adjusting the plans so long as it did not cost more money, people, or time, or cost to the actual end products, then I encouraged it."*

Leading and Encouraging Change

The findings suggest that the role of middle management includes aiding learning and nourishing change by encouraging organisational members to experiment with new approaches and adapt appropriately to changing conditions (e.g. Floyd and Wooldridge, 1992). For example, the removal of neutral voltage displacement bushing and re-design of tapchanger (see section 4.2.1.1) were both non-routine exploratory activities on the Optimus project demonstrating middle managers ability to lead change. From the interviews conducted, some of the middle managers explained how they encouraged change especially when changes were made on processes which employees had been engaged in since the 1970s'. One of the research informants, the Chief Electrical Engineer highlighted that even though some of the employees were resistant to these change initiatives, he tried to encourage them to embrace the change:

> *"I behaved positively when leading change. People who have been here for long were resistant to change, but I love challenges. They say we have never done this before. If you are not doing something new, your competitors are doing it. If you don't make the changes now, you will be left behind. In dealing with resistant people, if they don't do what I expect, I will do it and show them examples. So I simply led by showing examples."*

The next two quotes, taken from the Engineering Resource Manager and the Chief Insulation Engineer also highlight that middle managers encouraged change on the Optimus project and especially during these activities. They asserted respectively that:

> *"I have got no problems in anybody looking at procedures, processes, ripping them up, and getting back to work, that's all we do, we improve. Having said that, I would not do that if it is to do with the terms of employment or against health and safety*

issues. Anything else, please rip it all apart, come back to me with a better system, we would look at it. We might not be able to look at everything, because if I said that to all my team members, we would have over 100 improvement suggestions and we would not be able to deal with all that. So what I do is tell them to bring the best three which offers the best benefits which we can handle. We won't throw the rest away, but we may look at them in the future."

"We encouraged changes in several ways. We were looking all the time for constant improvements, better ways of doing the jobs, I mean the processes and systems. If you take any of my engineers for instance, when they come back to me with a better way of doing a job, we input it into the system. I ask and look at it from several different angles. I ask what the benefit is from an engineering perspective, can we improve the product? I'll also look at it from a commercial aspect, can we reduce the cost? And also from the quality perspective."

Middle managers, then, working on the Optimus project looked at the current processes in operation with the aim to change some of these and improve the "traditional way of doing things". They tried to implement better manufacturing practices in a bid to reduce lead time and for quick turnaround on transformer manufacturing. This is consistent with existing literature which suggests that middle managers are in the best position to facilitate change in organisations because of the information which they have access to and which they share. For example, middle managers serve as a hub through which most strategic information flows through organisations (Burgeleman, 1994; Nonaka, 1991; Floyd and Lane, 2000). Burgelman (1983a) and Floyd and Wooldridge (1992) both postulate that middle managers are responsible for facilitating and stimulating organisational change. They do this by encouraging other employees to sense change, relax regulations and by allowing divergent behaviours. Moreover, Pappas and Wooldridge (2007) suggest that through these divergent

behaviours, middle managers assist in developing new ideas and in reshaping organisational capabilities. Further, a Lean Engineer who also contributed to the Optimus project described how he had to encourage employees to accept process changes and experiment with new approaches. He highlighted that:

> *"I do recognise the need for change 100 %. I've been here for 26 years, and a lot has changed. I can see a lot changed in Transformers which was a small business is now a lot bigger. It is difficult to make changes happen in a big organisation. We were formally value streams, but that concepts didn't work. There are better chances of success in working in small units, for example, on this project. It makes people more responsible for change and taking accountability rather than hiding in a big organisation. But I acted as a change agent by being extremely proactive. I am extremely open to change and I believe in delivering what I said I would deliver. I also believe in keeping people involved on progress."*

Middle managers also led and encouraged change during the orchestration of the transformer and fan noise reduction activities which were both non-routine innovative activity (see Section 4.2.1.1). However, some of the shop floor operators complained that change was happening too fast. Others commented that the changes were only going to get them back to where they started. But the Continuous Improvement Manager noted that some of these concerns were due to historic events at the Brush factory. He suggested that the existing structure in the business unit constrained innovation and change. He also asserted that the length of service of some of the employees in the business unit, and specifically on the project may be a factor which constrained change. He stressed that the stability of the industry and of the organisation could also be a contributing factor here. But being an

advocate of change, he narrated how he encouraged the shop floor operators to embrace the diverse change initiatives. He suggested that:

> *"People hate change. Loads of people will tell you, "yes, we embrace change, we love change." They're all liars, people hate change. We like to be able to do things our own way, and the way that we've always done it, whether it's what time we get out of bed in the morning or whatever. We are creatures of habit. We don't respond well to change. We are slow to change. Change usually has to be forced on us. There are few of us around here who are natural change agents, we've got to get people to follow us. But it's tough, and you're never going to convince everybody. I can understand Brush is very like a number of other 100 year old engineering companies, where people have been here a long time. You've got a very low staff turnover here. You've got lots of generations of families work here. You go in that shop over there and there's father, son, and grandson in there. It's that type of thing. It's always been here. The facility has never moved around. It's a big employer for this relatively small town. Change is slow. The pace of change is slow. It needs to happen, and it needs to speed up, but it's quite a hard thing to do, but we have been encouraging it especially on this project, and we will continue to inspire people to change."*

This behaviour was also demonstrated on the DAX 4 project by middle managers. The Operations Manager (Stator) highlighted how he encouraged his team not to be risk averse, but to experiment with new approaches on the project. Referring to the Design Failure Mode and Effects Analysis (DFMEA) orchestrated during the first phase of the DAX 4 project (see Section 4.3.1.1), he narrated that:

> *"For me I think it's that phrase when I tell my people "you are actually allowed to make a mistake. As long as you don't kill somebody or burn the building down then*

the only way you learn sometimes is by making mistakes. If you're not making mistakes, you're not trying different things." That's the sort of approach that... (Inaudible)…. The easiest way is to be very risk averse and not try something new, so nothing changes. I sometimes quote I think it was an Einstein quote that says "you won't fix the problems with the same thinking that created them." So I encouraged them to think a little bit differently. I encouraged them to get out of this, "Well we've always done it that way." If it doesn't work then do something different. So very much encouraged them to think a little bit differently and change the way they approach a problem."

The recognition of the need for change made middle managers lead and encourage their team members to continuously improve the processes and modification of activities, as well as the project strategy:

"I encouraged new initiatives on the project. If somebody brings an idea to me, I certainly don't think that I've got all the answers. The guys that I've got working with me here in all but two cases are older than me, therefore probably more experienced than me. Some of them are more experienced than me in this company, I may be more experienced than them because I've followed quite a varied career path so I've done perhaps more than they have in a shorter time. But they all have more knowledge of this company than I do, because they've all been here longer. Some of them have been here for all of their working lives, so when one of them brings an idea to me, I've found that generally that idea is good. They're very intelligent people, they only bring an idea to you when they've thought about it a lot themselves and that they've decided that it actually has merit. They're the kind of people who, when they're bringing you a problem they've already thought about a solution, which is all you can ask for as a

middle management, that's what you're looking to develop people to do. So I encouraged them to bring forward those new ideas, some of this assisted in changing the trajectory of the project."

In summary, as highlighted earlier, a major difference between the Optimus and the DAX 4 project was that middle managers who led and encouraged change on the DAX 4 project met little resistance, while managers who modelled similar behaviour on the Optimus project had to deal with resistant shop floor operators.

Summary

Innovativeness, adaptability, and leading and encouraging change were exploratory behaviours demonstrated by middle managers during the orchestration of activities at different phases of both the Optimus and the DAX 4 project. The findings presented above demonstrate that middle managers encouraged the search for new organisational norms and routines as well as encouraged experimentation and innovativeness on both projects. These explorative behaviours were vital for the realisation of the objectives of both the Optimus and the DAX 4 projects. It must be noted however that these exploratory behaviours were shaped by the cultural resources draw upon my middle managers. These resources which include process and product technological advancement, and receptiveness to change are discussed in section 4.5.2. Consistent with Pratt et al., (2006), an overview of the data structure of the findings presented in this section is shown below in figure 6. The figure shows some of the exemplar quotes from the interviews, the theoretical categories (innovativeness, adaptability, and leading and encouraging change), and the aggregate theoretical dimension which is exploratory behaviours.

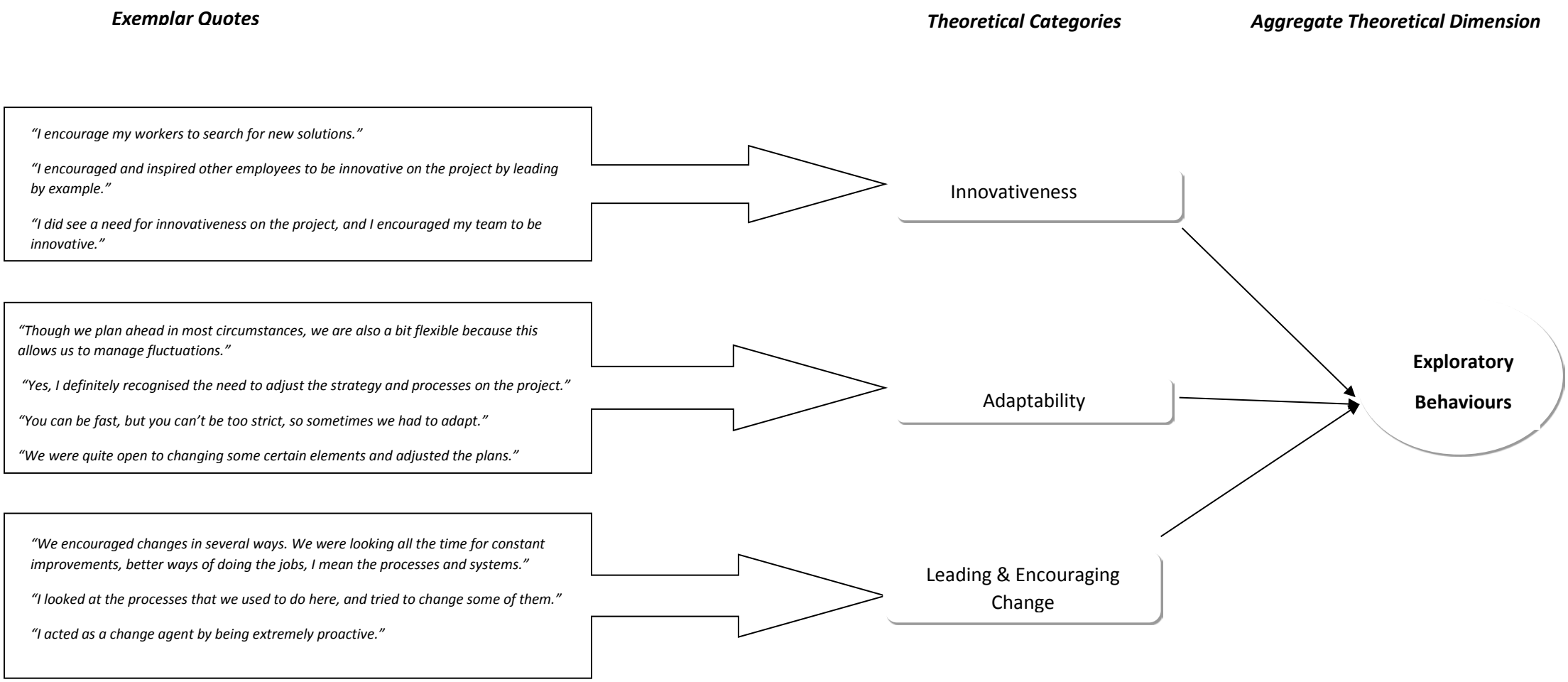


Figure 6: Overview of Data Structure for Exploratory Behaviours.

4.4.3 Middle Management Ambidextrous Behaviours

Raisch and Birkinshaw (2008) suggest that ambidexterity entails achieving the opposite objectives of exploration and exploitation, flexibility and efficiency, stability and adaptation. Birkinshaw and Gibson (2004) also describe contextual ambidexterity as the ability to combine alignment and adaptability related activities in a single business unit. Moreover, Wang and Rafiq (2012) suggests that it involves the integration of simultaneous activities within a single business unit while allowing differentiated effort in both. In this section, the findings on the identified ambidextrous behaviours of middle managers on both the DAX 4 and the Optimus projects are presented. As the DAX 4 project and the Optimus project continued, middle managers exhibited both exploitation related and exploratory related behaviours simultaneously. Importantly, the interviewed and observed middle managers demonstrated an ability to be aligned to the objectives of the respective projects as well as an ability to be adaptive to changes within the business environment and changes due to customer re-specifications. From the interviews, they highlighted how they dealt with the conflicting demands. The identified ambidextrous behaviours which middle managers demonstrated include multitasking, creativity, swift decision making and developing others. These behaviours were enabled by managers selecting various cultural resources from the organisations cultural toolkit. Some exemplar quotes, theoretical categories and the aggregate theoretical dimension (ambidexterity) are presented in figure 7 at the end of the section.

Multitasking

Multitasking was an ambidextrous behaviour which middle managers demonstrated and encouraged on both the DAX 4 and the Optimus project. The second and third stage of both projects was where middle managers exhibited the behavioural capacity to multitask the

most. This behaviour seemed to be one of the most easily identified behaviours demonstrated by middle managers during the orchestration of activities on both projects. Prior research suggests that ambidextrous managers must manage contradictions and conflicting goals (Smith and Tushman 2005), engage in paradoxical thinking (Gibson and Birkinshaw 2004) and fulfil multiple roles (Floyd and Lane 2000). Several scholars also argue that ambidextrous managers have both a short-term and a long-term orientation (e.g. O'Reilly and Tushman 2004; Probst and Raisch 2005), but Gupta et al. (2006) argues that it is challenging for an individual to excel at both exploitation and exploration. The research findings are consistent with prior arguments that managers can fulfil multiple roles and engage in multiple organisational activities. Importantly, the findings support arguments that middle managers are important sources of organisational ambidexterity (e.g. Mom et al., 2007).

Specifically on the Optimus project, asides multitasking themselves, middle managers encouraged their teams to multitask in a bid to ensure that the objectives of the projects were realised. As an example, during the lead time improvement activities orchestrated in the third phase of the Optimus project (see Section 4.2.1.3), middle managers orchestrated multiple conflicting activities and allowed their teams to use their own judgement as regards dividing their time between the contrasting activities that they were working on. For example, the Engineering Resource Manager, one of the middle managers who contributed to the project, suggested that:

> *"Improving the lead time was not an easy task. Currently we have strict KPIs that we need to hit which is hours we cover, efficiency, quality, on time delivery and lead time, that's what we focus on and they are good measures. There's nothing wrong with that, and health and safety obviously, they are all good measures. But to get the*

best out of those measures you also need to be quite innovative. So what we did was focus on all these activities and juggle them to achieve our aims."

A number of respondents narrated how they were able to juggle and balance the exploratory activities and exploitative tasks during the third phase of the project. A practical narrative was offered by one of the Lean Engineers who commented on some of the challenges they had and how these challenges were resolved through multitasking. She also commented on lessons learnt which were incorporated into the new processes:

"We had challenges getting some transformers out in time. Also, some people were not happy that changes were coming in as quick as possible, because of the work load. We resolved these challenges by prioritising work and by multitasking, throwing overtime at it, making sure that we knew what items needed to be released, or if we were going to be late, which one they needed first, and by when to cause the least amount of problems. We still caused problems, but that's one of the things we would take from it, and how to do it in the future."

The Engineering Project Manager also commented on how he multitasked as well as encouraged his team to use their own judgements in dividing their time between the various activities. He commented that:

"……Quite lucky really, most of the managers we have got resolved their own issues on a day to day basis. There were some major issues, but so long as it's not breakdown of machines, we always handled it by moving things around. We juggled things around and I multitasked by prioritising, my managers did multitask too, and they were all empowered to deliver on the KPI's in the best way they could by moving things around on the project to meet deadlines."

Moreover, the Continuous Improvement Manager corroborating the above on how managers multitasked during the orchestration of activities on the Optimus project simply noted that:

> "*We had to multitask all the time. It comes as second nature to me; I call it spinning the plates. I've always been able to do it....at the moment, I have numerous tasks going on, I mean on the project."*

Also, from the narrative offered by the Mechanical Design Engineer, the researcher found that prioritising was important when middle managers multitasked. He noted that:

> *"In terms of getting multiple things done on the project, basically, I prioritised day by day and week by week. I do have a core overview of here's the head line projects that my manager has asked me to look at and I know my objectives. I have the core activities broken down and I just prioritise each day around that. We try to work without distraction, but that's difficult at times. I tend to focus on the once I see as the most potentially impactful."*

On the DAX 4 project, middle managers demonstrated the same behavioural capacity to multitask. While they applied their current experience and expertise to achieve the initial objectives of the project, on an on-going basis, they simultaneously scanned for and applied new knowledge which was important for realising the goals of the project. Put differently, the interviewed middle managers emphasised how they were currently exploiting existing competencies and tacit knowledge on the project, as well as describing how they were still on the lookout for opportunities to improve at different phases of the project. Highlighting this point, the Operations Manager (Stator) and the DAX 4 Mechanical Engineer respectively asserted that:

"……I am always keen to try something new or see something new happening. I like to make sure that I have an in-depth understanding, so I do my own home work, and try and encourage the guys to be adaptable without forgetting the plans that we have set out. Ultimately, what we did was to juggle our time and shuffled the activities on the project; I kept our customers aware that we were dealing with their requests. The quicker we can respond, the more opportunity we have for the business."

"During the late stages, trying to achieve a variety of contrasting objectives on the project was challenging, but I feel that this is the need of the hour, so I am okay with the pressure. If you are not multitasking in this changing environment, you will rather not be here. I like to be under pressure because I work well under pressure."

Other managers on the DAX 4 project explained that their daily working lives involved multitasking and this was not just specific to this particular project. They suggested that as managers they are not expected to be experts in a limited field but be knowledgeable on a wide range of subjects as their duties demand. Moreover, on the DAX project, just like was observed on the Optimus project, middle managers multitasked by prioritising and setting out a time frame for different activities on the project for each day. They suggested that they reviewed the activities in order of importance to the business. This was challenging, however, for example, the DAX 4 Project Manager discussed how she coped with pressure by juggling things around:

"We are coping well with the pressure of multitasking on the project. But sometimes, it is difficult. I work on the basis that first of all, the first thing I have to do is to understand each task that I am doing. Because you can't do this without first of all understanding the strategy, the current activities and the new changes. My day is quite extensive, calls from inside and outside of Brush, but when I look at a problem, I

solve it there if I can. I don't let it carry over to the next day. If you leave an issue for later, it becomes more complicated. I always analyse issues and solve them there and then and move on. If not, suddenly you have 5 problems on the table, and you need to juggle them."

In summary, the findings in this section is consistent with the arguments of scholars such as Smith and Tushman (2005), Gibson and Birkinshaw (2004) and Floyd and Lane (2000) who all suggest that managers orchestrate paradoxical organisational activities. Although extant literature (e.g. Smith and Tushman, 2005; Gibson and Birkinshaw, 2004) observes that some managers seem to be able to take on contradictory tasks, ambidexterity theory fails to explain why these managers are able to do so at the micro-level.

The research findings presented above thus indicate how managers are able to engage in multiple activities and orchestrate ambidexterity through their behaviours. The data and the observation of middle managers suggests that managers who are comfortable with dealing with pressure and who have a strategic understanding of the objectives of their organisations are in a better position to orchestrate ambidexterity. Multitasking was a key behaviour demonstrated and encouraged by middle managers, which ensured the success of both the DAX 4 and the Optimus projects. This represents a development of the theory, since existing research doesn't justify why some managers are comfortable with multitasking. Moreover, research has not clearly identified how managers may shape their behaviours by selecting diverse cultural resources. Managers were able to multitask by using elements of the organisational culture as a toolbox. Cultural resources such as delivering service excellence to customers, maintaining a reputable brand, teamwork and collaboration, and upholding integrity were used to enable this behaviour as well as the other identified ambidextrous behaviours. These cultural resources are discussed in detail in section 4.5.3.

Creativity

Creativity was another ambidextrous behaviour demonstrated and encouraged by middle managers during the orchestration of activities on both projects. As highlighted earlier, managers enabled this behaviour by using the organisational culture as a toolbox. On the Optimus project, middle managers encouraged their teams to avoid complacency and be creative. A Lean Engineer who was working on the project highlighted that though he gave the needed support to his team, he allowed them some freedom to be creative and identify new ways of improving the transformer product. He noted that:

> *"I am always very creative, and I encourage my team to think for themselves too. That's really important, because I've worked in jobs where the person who is above me just wanted it done his way. I found that very restrictive in terms of my creativity. So what I try to do is I coach them and give them support, give them a bit of direction. But ultimately what I want them to do is to be able to think for themselves, be proactive and be positive about what they're doing. So rather than me have to chase them all the time, it's for them to come back to me and tell me what they're doing. I encourage them to take responsibility for the improvement that they're working on. But I also encourage them to be creative and to use their own knowledge and experience, in terms of getting the result that they need to get."*

The quote above suggests that middle managers created a flexible context which encouraged shop floor operatives to use their own judgement in dividing their time between the exploratory and exploitative activities which were being orchestrated on a daily basis. This was clearly evidenced for example when there was an increase in demand during the third phase of the Optimus project. The Continuous Improvement Manager asserted that:

"Our strategy did rely on careful planning, but in this environment, there has to be a level of creativity. Because things go wrong. For example we have a transformer down now, and it should be on final test, but it's blown up. It's not going to be fixed in 2 hours, it's going to be fixed in 3 or 4 weeks. Can you plan out every single eventuality? No, not in this business, so we always need a bit of creativity."

So the challenges on the projects were resolved by middle managers being creative as well as encouraging their teams to be creative. This is consistent with existing literature which suggests that the challenge of simultaneously performing both routine and non-routine tasks can be resolved through creativity (e.g. Duncan, 1976; Tushman and O'Reilly, 1997). This is also consistent with Adler et al. (1999)'s research which suggests that challenges can be balanced through metaroutines which systemises creative processes as well as through job enrichment, switching, and partitioning. Other scholars such as Sheremata (2000) discuss managers' collective and creative actions while Jelinek and Schoonhoven (1993) argues that dual structures which fosters both discipline and creativity can resolve the challenge of innovation. However, what is distinctive about the data presented above is that it identifies creativity as an ambidextrous behaviour which may promote ambidexterity at the micro level. This is an extension to the ambidexterity theory.

Also, while observing some of the middle managers, the researcher noticed that during informal conversations, some of them encouraged their teams not to be bound by conventional thinking but to continuously come up with new ideas. As an example, when changes were introduced on the Optimus project (e.g. change in radiator suppliers, see section 4.2.1.3), some middle managers noted how they had to be creative as well as encourage their teams to model such behaviour while orchestrating activities on the projects. In another example, the Engineering Resource Manager highlighted how they had to be creative after

the change in structure, both within the Transformer Business Unit and on the Optimus project:

> *"Previously structures were for efficiency, I don't think the structure were strong enough to allow people on the shop floor to be creative, because a lot of the good ideas come from the people who actually do the job, they know better than anybody else. With the current structure, team leaders coming from the shop floor helps the team unit managers to then start having creativity, rather than be, what I would say, soldiers at the front line running around and just surviving. These are generals in the back line planning and coming up with a strategy, using the soldiers to help develop the business."*

Creativity was also a behaviour demonstrated by middle managers on the DAX 4 project. During the course of the interviews, the Operations Manager (Rotor) narrated how they had to be creative to ensure that the changing business environment did not affect their ability to achieve the objectives of the project. He commented that:

> *"We have to be creative to make what we make. We needed to be rigid in the ways we produce the things we produce. On this project, we had to be creative in terms of new designs and customer suggestions, but we needed to be rigid in following standards."*

Asides demonstrating creativity on the project themselves, middle managers also described how they encouraged their teams to be creative as well. As an example, the DAX 4 Mechanical Engineer noted that:

> *"If the team is operating in an environment where they know that they're encouraged to be creative, and they have autonomy, they're empowered, I think that comes naturally. If you don't empower your guys, if they have to come to you for every*

decision, if they daren't make a decision without first checking with you, then you'll never get flexibility, you'll never get innovation and you'll limit efficiency. So while we implemented the improvement initiatives, and searched for new solutions, I always encouraged my guys to be creative."

In summary, the data presented above has provided evidence of a number of examples where middle managers demonstrated, as well as encouraged, creativity. To reinforce the assertion made above, middle managers noted that while there was a rigid plan and there were rigid boundaries and rules, in order to maintain discipline, they empowered their teams to be creative in resolving any challenges that arise. From the data presented above, it can be concluded that if middle managers had not been creative (behaviour enabled by cultural resources) or allowed their teams have the freedom for creativity on the projects, the projects would not have been successful and the overall objectives would not have been realised.

Swift Decision Making

Another ambidextrous behaviour recognised from the observations of middle managers was their ability to make swift decisions, especially during the second and third phase of the Optimus project. From team meetings it was evident to the researcher that middle managers took decisions swiftly and systematically, especially when the windings had to be outsourced during the second phase (see Section 4.2.1.2). Middle managers demonstrated the ability to proactively approach and clarify issues as well as implement timely decisions. Through several discussions during some of the meetings, the researcher noticed that middle managers usually identified and evaluated the likely outcomes of their decisions. Some of these middle managers also demonstrated the courage to address these underlying issues, which prevented some of their team members from making swift decisions.

The Operations Manager (Transformer), for example, usually made effective decisions in the absence of complete information and even when under pressure. These decisions were later communicated to the team and to the senior management team, specifying outcomes and reasons for the decisions which had been taken. He routinely communicated these to those impacted, including either internal employees or customers. Specifically during one of the interview sessions, the Operations Manager (Engineering) commented that:

> *"Manufacturing dates are important. If we are under pressure, we must deliver; we must work on time and deliver. So I motivated my team and I carry them along. When established routines no longer fit the current circumstances, we adapted. We created new processes and new engineering instructions and I don't need the senior management to reward me specially or prompt me, because I am doing my job. I don't like going back to them every day, I had to make these decisions quickly to change as required, and I do have the powers to change the process, but within the required boundaries."*

Mom et al. (2009) argues that a manager's decision-making authority will be positively related to this manager's ambidexterity. They suggest that a manager's decision-making authority is about the extent to which such a manager has decision-making authority over how and which tasks the manager performs and his or her ability to solve problems and to set goals. Other scholars such as Tushman and O'Reilly (1996) argue that managers have an increased sense of how they conduct their tasks when their decision making authority is increased. O'Reilly and Tushman (2004) also postulate that when a managers decision making authority is increased, such a manager begins to focus more on short term as well as long term issues which may define organisational success. Moreover, Sheremata (2000) concludes that increasing managers' decision making authority increases their urge to seek

solutions to problems both within and outside the framework of the existing strategy and beliefs. The quote above is consistent with the assertions of these aforementioned scholars. Middle managers who were working on the Optimus project made swift decisions and acted decisively when necessary. The result of this was a faster turnaround time for meeting customer needs and for adjusting the processes and teams on the project. What is different about the data presented above is that even though middle managers had the powers to make these decisions, they still had some boundaries. The quote below from the Mechanical Design Engineer further highlights that middle managers repeatedly made swift decisions as well as encouraged their teams to model this behaviour:

> *"You have to make decisions all the while, almost on a day to day basis. I've got no problem with team unit managers making a decision. If they get five right and one wrong then that's great. I'd rather make a decision than just wait and let something fail. If they can make a decision and it works then I empower them to do that. Because I've seen it in the past, and in other factories, where they think it's not their role to make those sorts of decisions, and the next day you come in, there's a part that hasn't been done, and that's purely because nobody made the decision. So when they needed to change a process in my absence, I encouraged them to make the decisions, but within boundaries."*

Similarly on the DAX 4 project, once the trajectory of the project changed, middle managers assisted in creating an environment which allowed their teams to act decisively by clarifying their roles, responsibilities and limits of decisions making. They also encouraged their teams to exercise judgement in making decisions in situations of ambiguity. Some of the interviewed middle managers suggested that they encouraged their teams to make effective

decisions within their role without unnecessarily seeking permission from them. As an example, the DAX 4 Electrical Engineer commented that:

> "*Our standards and specifications are robust enough to give each individual the information they need to make the right decisions as quickly as possible at each point in the process of production. A key fundamental principle here is that the responsibility for decision making lies with the team or individual who is carrying out the work, of course supported by a robust process."*

Another middle manager who modelled this behaviour was the DAX 4 Project Manager, who noted:

> *"When we needed to adjust due to business demands, I was wise enough not to run to my senior manager in all situations. You have to do a lot of sieving through the logic in your own mind and make the necessary decisions as quickly as possible. If the decision cannot be made, then it's worth taking up and involving the senior management team. I think that's when you get things done better instead of every single idea, because they can get fed up after a while if you keep running to them."*

Ambidexterity literature suggests that ambidexterity requires senior managers to be able to accurately sense changes in their competitive environment, including potential shifts in technology, competition, customers, and regulation, and be able to act on these opportunities and threats to meet new challenges (see O'Reilly and Tushman, 2011). But the data presented above suggests that middle managers are also in a good position to respond to changing market needs by making swift decisions and encouraging their teams to model such behaviour as well. Thus, this is an extension to the ambidexterity theory.

Developing Others

Another behaviour which middle managers demonstrated during the orchestration of organisational activities on the Optimus project was developing others. Middle managers were responsible for training the shop floor operators especially during the vacuum filling of transformer tanks which was a non-routine product/process innovative activity. Middle managers assisted in improving their team's capabilities as well as extending the team's competencies. They identified and provided opportunities for their teams to improve themselves to be able to adequately undertake the task of building the transformer tanks using the new method of production, alongside the existing methods. Middle managers strived to ensure that their knowledge and the knowledge of their teams was always ahead of the competition. Interaction on a day-to-day basis with middle managers during this phase also revealed that they valued increasing their technical proficiency in their area of expertise. Trainings were first rolled out to managers and team leaders who subsequently trained the remaining employees. During the interviews, some of the middle managers highlighted the importance of training and developing the skill set of the workforce. The newly revamped academy which serves as a training area outside the workshops or shop floors was described as a very important initiative. This academy area is where the theoretical training needs of the employees are met. The Continuous Improvement Manager discussing on this highlighted that:

> *"In terms of the capabilities of the business to deliver training, it is as good as anything I have ever seen. I think the investment in the academy shows that the business is really serious about training and development. The business does recognise that we have got an aging workforce, 40 years' worth of skills. If they are not careful, they are going to lose those in the next 5 to 10 years, with nothing else to*

replace it. So the apprentice scheme, I think shows a real commitment in terms of developing the skills going forward.

Moreover, some of the interviewed middle managers narrated how they assisted their teams in developing their current areas of competencies as well as assist them to learn new skills through training and knowledge sharing. The Engineering Resource Manager who orchestrated training activities for example noted that:

"Basically, my job is to get things out of the door, the simple view I take is I give my team the method, means, and the materials, and I expect them to do the job within whatever guidance we give."

Also, some of the interviewed middle managers, for example, the Chief Insulation Engineer narrated how they were able to negate the resistance which came up from time to time through training and knowledge sharing. He noted that:

"What we tend to do is come up with the best practice and work with teams. We send one of the guys to train teams and roll it out. We make them get used to the process. We review how we do our jobs and ensure that we are using the best practices. Some jobs that used to take 3 months now take 4 weeks. So we sort of put new processes together and help employees break bad habits. We have got that out now, best practice is best practice, not saying I have been doing something for 30 years."

Middle managers also provided opportunities for coaching where needed as well as shared information openly and honestly during all phases of the Optimus project. This they suggested was necessary to speed up the achievements of the objectives of the project. The Operations Manager (Manufacturing) who described how he mentored a Team Manager under him who was working on the Optimus project commented that:

> *"I think really through, again if we talk about Richard* (pseudonym)*, we sent him on an external Lean Six Sigma Black Belt course. I could have trained him and coached him, but it would have taken too long. So what I wanted to do was get him up to speed, get him trained and certified in our method of working as we go forward. So he's now finished his 17 day course, and he is now a Lean Six Sigma Black Belt. That was a commitment that I gave for the business. Then what I'm doing, I'm working with him as he goes through his certification process, which is where he will then get assessed by the people who trained him, on how well he's applied the tools and techniques. So I'm coaching him and mentoring him through that process, so when he gets to do his test, and then when he gets to do his project portfolio, he's got everything that he needs to become certified as a Lean Six Sigma Black Belt."*

Correspondingly on the DAX 4 project, once the trajectory of the project changed, middle managers facilitated the training and development of their teams to be able to have the capabilities to carry out the various existing tasks as well as new processes on the project. This behaviour was demonstrated during the orchestration of the routine and non-routine exploratory activities such as during the upgrade of the insulation system and during prototype development. Some of these activities required some variation from the current production processes while others required only minor incremental adjustments. During one of the interview sessions, the DAX 4 Mechanical Engineer simply noted that:

> *"In the last few months, there are different technologies that we have learnt, so we had to always facilitate training sessions and get the guys on board."*

The next quote, is taken from the DAX 4 Electrical Engineer during one of the interviews. He spoke on how they trained their teams on the DAX 4 project. His narrative further highlights

this ambidextrous behaviour which was demonstrated by middle managers on the DAX 4 project. He asserted that:

> *"As things changed from time to time, training and coaching became even more important, so one is more formal than the other. Coaching is something that I like to do with my managers and team, it is personally something that I see in myself as a strength. It is very informal the way I do it, which is encouraging them to explore and develop their capabilities and encouraging them to push the envelope, to stretch out and do things that maybe they haven't been allowed to do before. More formally than that, structured training."*

Some of the other interviewed middle managers also narrated that in situations where training needs were identified, they discussed it and where the budget allows, they did it. This was alongside looking at more personal development plans which may improve the strategic awareness and the abilities of their teams to discharge their duties in a more strategic and commercial manner. Moreover, the DAX 4 Project Manager narrated how she facilitated and encouraged multi-skilling of the DAX 4 project's team for the benefit of the business. She narrated that:

> *"A truly flexible work force is derived from a workforce that has a diverse set of skills. Each individual within the team should have at least 3 core skills. Firstly, we have the primary skills – the role they are predominantly employed for and which they have the most skill. The second is the secondary skills – a role they can defer to when required to support other areas. Lastly we have the tertiary skills – a role they occasionally fulfil if capacity in other areas cannot be managed sufficiently by the people with primary and secondary skills. Within the department and on this project, through constant trainings, we have ensured that these skills are updated. So a multi-*

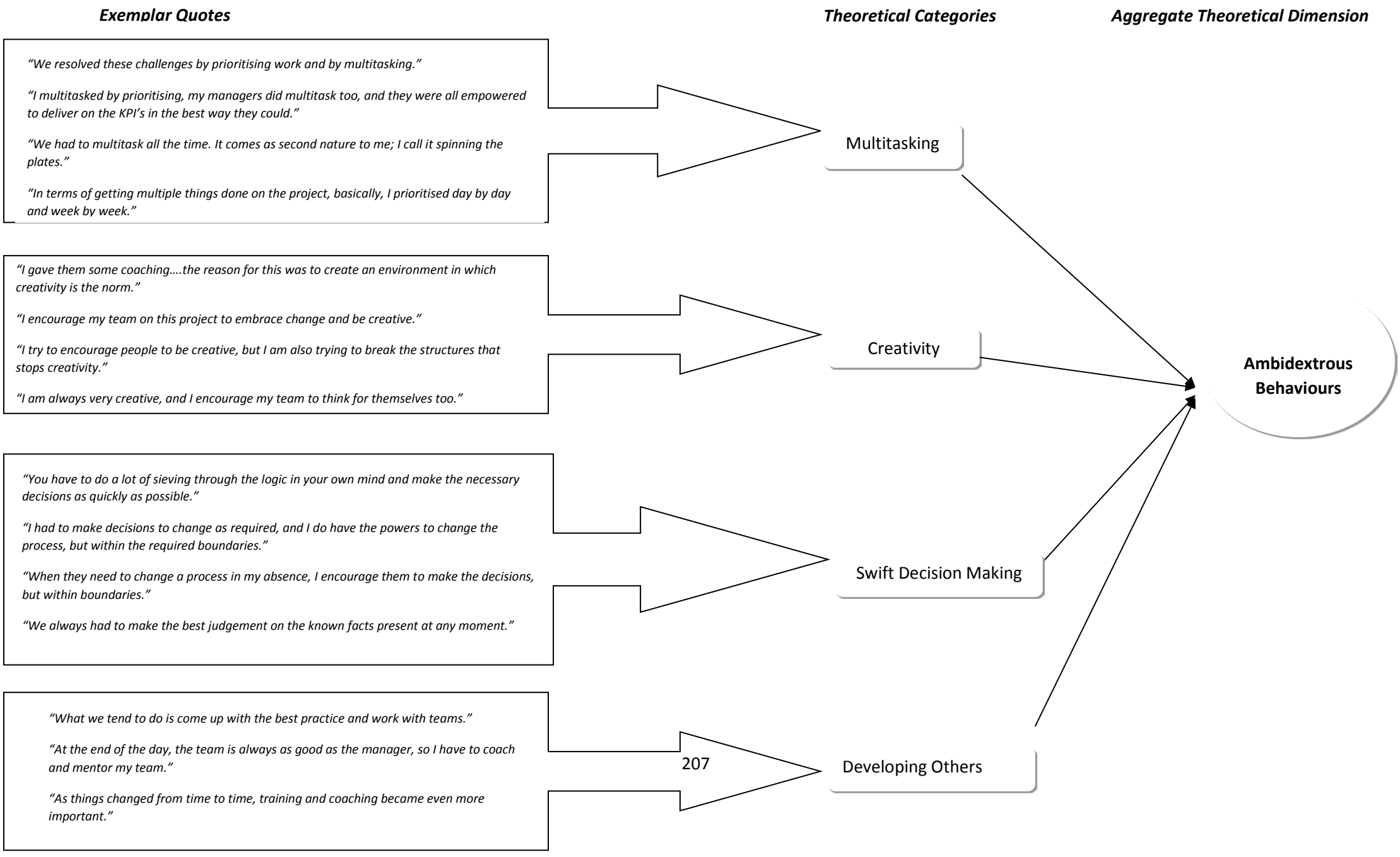
skilled workforce benefits individuals as well as the business as everyone learn new skills that allow them to work towards the success of the project."

Summary

The ambidextrous behaviours exhibited by middle managers during various phase of the Optimus and the DAX 4 project included multitasking, creativity, swift decision making and developing others. These behaviours were also vital for the realisation of the objectives of both projects. Ultimately, these ambidextrous behaviours (enabled by the organisational culture) demonstrated by middle managers on both projects further assisted Brush in its ability to remain competitive in the face of changing market conditions.

An overview of the data structure of findings presented in this section is shown below in figure 7. The theoretical categories are multitasking, creativity, swift decision making and developing others; while the aggregate theoretical dimension is ambidextrous behaviours. In the next section, the specific cultural resources which middle managers used to shape their behaviours are presented.

Figure 7: Overview of Data Structure for Ambidextrous Behaviours.



4.5 Cultural Resources

Swidler (1986) and Kellogg (2011) assert that the cultural toolkit of an organisation is a grab bag of norms, beliefs, values, frames, rituals, ceremonies, gossip, stories, jargon, rhetoric, humour, justifications, and routines, which organisation members use to shape their actions as they go about their day-to-day work. Therefore, the findings presented in this section build on the premise of Swidler's (1986) work, which suggests that culture provides the materials (toolkit of resources) from which individuals and groups construct diverse strategies of action. In other words, individuals can select certain cultural resources and invest them with particular meanings in concrete life circumstances such as during the orchestration of organisational activities.

Swidler (1986) and Weber (2005) also argues that language provides a good way to assess actors' cultural repertoires. Therefore, the researcher inductively identified the cultural resources which were mainly extracted from the textual data generated from answers to interview questions by middle managers and from organisational documents. These cultural resources drawn upon by middle managers were consistent on both projects. The researcher also noticed that the identified cultural resources were somewhat stable and discrete (consistent with the assertion of Swidler, 1986).

Asides the analysis of the interview transcripts, data on day-to-day interactions were also collected through regular observation of middle managers who contributed to both projects. The researcher observed that middle managers used the identified cultural resources routinely and would sometimes simultaneously select multiple cultural resources when they deemed it fit to shape different behaviours (e.g. Leonardi, 2011). In other words, the cultural resources which middle managers drew on from time to time depended on the activities which needed to be achieved at a certain point in time. What follows is a presentation of the findings of the

identified cultural resources which middle managers used to shape and enable their behaviours (e.g. exploitation, exploration, and ambidexterity) on both the Optimus and the DAX 4 projects.

4.5.1 Cultural Resources and Exploitative Behaviours

The cultural resources which middle managers drew upon to enable their exploitative behaviours are presented below.

Improving Product Efficiency and Process Effectiveness

A core cultural resource that the respondents used to shape their exploitative behaviours on both the DAX 4 and the Optimus projects was improving product efficiency and process effectiveness. Leonardi (2011) identify increased effectiveness of organisational processes as a shared value, while Rindova et al. (2011) identified improved efficiency and high quality of manufacturing as an historical cultural resource in their case study. Middle managers selected product efficiency and process effectiveness from the cultural toolkit during facilitation of exploitative activities on both projects when they started. Specifically, this was evident during the first and second phase of the Optimus project. Middle managers had an appreciation of continuous advancement, development and upgrade of the current competencies, processes and the products. They spoke about the need to constantly improve their performance and generate new incremental adjustments and standards to improve the generator and transformer products. Swidler (1986) suggests that people will come to value ends for which their cultural equipment is well suited. Improving product efficiency and process effectiveness as a cultural resource was used to shape their behaviours as within the organisation there was a collective display and appreciation for upgrading the products, processes and improving the skills of employees. The researcher was able to identify this through the stories which middle managers shared and through the rhetoric's used during

some of the interviews. Specifically, on the Optimus project, the Engineering Resource Manager suggested that:

> *"Whether you are a director, manager, team leader, operator or administrator, we have a culture which allows all processes, no matter how big or small, to be subject to review and improvement. This could be our internal processes of how we manufacture our products and support production, how we manage customers, how we sell, how we select, manage and develop our supply chain, how we train and up-skill our workforce, how we design and engineer our products and so on."*

The quote above suggests that improving the organisational processes was greatly appreciated by employees within the organisation. Middle managers who demonstrated an alignment to the strategic plans of the project as well as guided the process of its implementation did so because they valued the advancement of processes and ultimately the attainment of maximum efficiency. The Engineering Project Manager noted that:

> *"In the past, there was a broad culture and believe that improvements was the responsibility of the quality department. But presently, our standards and specifications are robust enough to give each individual the information they need to make the right decisions at each and every point in the process."*

The above strongly indicates that within the organisation, the continuous advancement of processes is not only encouraged but also shared. From observations middle managers routinely spoke about this cultural resource to justify their behaviours and actions during informal conversations and during formal team meetings.

Correspondingly, on the DAX 4 project, in the perception of many interviewees, improving product efficiency and process effectiveness appeared to be a critical cultural resource which

middle managers selected and deployed from the cultural toolkit. A manager who clearly highlighted this resource was the DAX 4 Mechanical Engineer noting that:

> *"We have a culture within the organisation which actively encourages people to impart their knowledge and experience for the good of the company. Our culture embraces improvements and we strive to continuously improve our products."*

The above comment suggests that because managers valued improving product efficiency and process effectiveness, they behaved in ways which were advantageous to the realisation of the DAX 4 project's strategy. The DAX 4 Electrical Engineer asserted that:

> *"There is always something that we can make better, not necessarily change, but make better. I think we have that sort of culture where it becomes part of the normal day to day process to challenge what we do and improve things. There is a lot of more improvement that goes on here, and the right type of improvement, this year even, than there was last year."*

In what can be described as an organisational story, a middle manager (Lean Engineer) gave a similar impression as above during an informal conversation at the staff canteen in the first few weeks of the researcher working at the Brush factory. In discussing a specific middle manager, he said the manager had come in, looked at what needed to be done, and is making what could be termed as basic changes but they are having a big impact. Further interview comments such as those from the Operations Manager (Rotor) also support the assertion that improving product efficiency and process effectiveness shaped managers exploitative behaviours:

> *"As an organisation we have a culture that encourages constant improvement. It is a constant struggle in many organisations between the day-to-day commitment to*

schedules and activities, and the need to take a step back and review processes for development. Generating an atmosphere that this is a good thing and that you won't be punished for trying to improve things can actually have a real influence on the continuous generation of ideas. So what we have here is an environment, I mean a culture which encourages improvements on a daily basis. We have this embedded in our routines and processes."

In summary, the data presented above suggests that an appreciation and a selection of improving product efficiency and process effectiveness as a cultural resource on both the DAX 4 and the Optimus project enabled managers to behave in ways consistent with implementing the strategic plans on both projects. Middle managers used this resource to shape their exploitative behaviours such as alignment, as well as guiding refinement on both the DAX 4 and the Optimus projects. This was vital for the success of both projects.

Cautious Improvisation

Analysing the interview data revealed that middle managers picked on cautious improvisation as a cultural resource to shape their exploitative behaviours such as alignment and guiding refinement when both projects started. Various comments made by some of the interviewed middle managers suggested that cautious improvisation on both projects was of importance to them. As an example from the first phase of the Optimus project, the Chief Electrical Engineer narrated that:

"Brush is a very old organisation, and as willing as certain managers might be to do different things, the timing it takes everyone to get on board is long. The time it takes to make things happen is long, it moves slower than most businesses I have seen. The sense of urgency is also not always naturally there. I can say that our business is relatively stable, and it's a bit difficult rocking the boat."

The comment above suggests that although middle managers valued and selected improving product efficiency and process effectiveness from the cultural toolkit, they also valued and selected cautious improvisation to enable their exploitative actions and behaviours. This is a possible reason as to why it took time for some employees to support certain courses of action. Thus, middle managers guided the refinement process in ways that did not cause any unnecessary disruption to the production process. Moreover, middle managers used phrases like *"if it is not broken, don't fix it"* and *"that's how we've always done it"* during informal conversations. These can be described as some of the norms and standards which are widely shared (e.g. O'Reilly, 1989). Swidler (1986) argues that people do not build lines of action from scratch, they construct chains of action beginning with at least some pre-fabricated links. Cautious improvisation as a cultural resource was not a new resource which middle managers had to formulate (e.g. as described in unsettled cultures). Picking on cautious improvisation was as a result of an existing and habitual line of action which middle managers were already familiar with. A reason for this may be the relative stability in the power generation industry and the length of service of some of the middle managers in the organisation.

So on the Optimus project, middle managers worked towards achieving the strategy of the project, but did not rush into hasty changes because they valued cautious improvisation and because of the norms identified above. The comments of the Operations Manager (Engineering) indicates that middle managers on the Optimus project picked on cautious improvisation as a cultural resource to enable their behaviours:

> *"We have a very mature product. It was designed when I first came here in the 70's and slowly we have improved those transformers over that period of time. We have taken small but significant steps. We have learnt by taking those small steps. At*

various times, it can be senior managers or middle managers that make suggestions, but we have to keep our focus on the quality of the product. We can do something that will deflect the quality of the product if we keep on changing things. I am very conservative because the longer you are here the more you see that when we have changed some things, it causes an issue. Innovation is a difficult one because it does have a two edge sword. So I say to my guys, maybe we should seek a bit more advice on issues."

So in the perception of many interviewees on the Optimus project, there was an appreciation of continuous advancement, development and upgrade of the current competencies and processes, but middle managers were careful not to rush the activities. They spoke about the need to constantly reach further to improve the performance of the transformer product and generate new ideas and standards, but they ensured that this did not unsettle the status quo.

Cautious improvisation as a cultural resource seemed to be clearly engrained and valued by managers on the DAX 4 project as well. It was highlighted by the DAX 4 Project:

"We are very weary of improvisation because if you don't know the result of what you are doing, potentially, you might have generators that will fail. Our current product is reliable, so I tend to be very cautious. Sometimes people come up with ideas, and we say, oh, that's actually daft. There are very few ideas that we can include in developing the products. Small changes are part of the DAX 4 project, but big changes may be negative. Also, we don't change things just because someone suggested it."

So on both projects most middle managers drew on cautious improvisation as a cultural resource from the toolkit to shape and enable their exploitative behaviours, consistent with

the culture of the organisation which is fairly rigid. The heavy engineering led approach makes the organisational processes very conservative. It takes a lot of convincing of the shop floor workers that processes can be done differently. That filters all the way through in terms of what these shop floor workers are prepared to change or not.

It may be suggested that cautious improvisation as a cultural resource is similar to being 'careful' described as *'action styles'* by Weber (2005). Weber suggests that this contains attributes used to describe the style of competent management. Examples include being rational, being committed, being careful or being decisive. These categories evoke connotations about the norms and rules of conduct that should govern corporate management.

4.5.2 Cultural Resources and Exploratory Behaviours

As highlighted earlier, at different phases of the Optimus and the DAX 4 projects, middle managers demonstrated exploratory behaviours such as innovativeness, adaptability, and leading and encouraging change. In shaping these exploratory behaviours, they drew on two cultural resources (product and process technological advancement, and receptiveness to change).

Process and Product Technological Advancement

Process and product technological advancement appeared to be a concrete symbolic resource which middle managers used to enable their exploratory behaviours, such as adaptability, leading and encouraging change, as well as innovativeness. The Mechanical Design Engineer on the Optimus project narrated that:

> *"Each individual on my team and within the entire business continuously transfers knowledge between each other. We all have a clear responsibility to provide and share current knowledge, skills and tools around how to advance our processes as*

well as how to facilitate new knowledge and ideas which may improve our activities. We have a culture that actively encourages people to impart and develop their knowledge and experience for the good of the company."

The quote above suggests that middle managers and organisational members had a collective appreciation for continuously transferring knowledge and ideas which may assist the organisation in advancing its products and processes. Thus, middle managers demonstrated adaptability and innovativeness as well as led change on both the Optimus and the DAX 4 projects because they valued process and product technological advancement and selected it as a cultural resource to shape their exploratory actions and behaviours. Corroborating the above assertion, during team meetings, middle managers spoke casually but repeatedly about why they continuously scanned and applied new methods to assist in the development activities they were orchestrating. Some of these middle managers commented that they responded to and acted upon feedback for improvement which they received either internally or from customers, on both projects. As an example, the Operations Manager (Transformer) who contributed to the Optimus project suggested that:

"…*You've got to make sure you never stop learning. Anthony* (pseudonym) *will tell you that. He's been here 48 years, but he's still learning. He still thinks he can learn. So you can't turn your back on the fact that you can pick things up."*

Moreover, when comparing most of the interviewees' comments and rhetoric on the Optimus project, it became apparent that their views were similar. Another middle manager, the Continuous Improvement Manager asserted that:

> *"Every day is a school day, if somebody tells you that they know everything and that there's nothing more to learn, then they're a liar. My view – I learn something new every day, often from these guys, and every day's a school day."*

So middle managers picked on process and product technological advancement from the toolkit to shape their exploratory actions and behaviours when the objectives of both projects were adapted and extended. Because of an appreciation of this cultural resource, middle managers behaved in ways consistent with aligning themselves and their teams to the adapted strategies of the projects.

Correspondingly, data from the interviewed middle managers on the DAX 4 project suggested that middle managers picked on process and product technological advancement to shape their exploratory behaviours as well. For example, the DAX 4 Electrical Engineer noted that:

> *"Creating an atmosphere that change is a good thing and that nobody will be punished for trying to change things has actually had a real influence on the continuous generation of new ideas on the project and across the factory."*

Conclusively, middle managers appeared to value process and product technological advancement and used this as a cultural resource to shape their exploratory behaviours. Positioning the findings relative to existing literature reveals some similarities and differences. For example, Rindova et al. (2011) identify technological innovation as a resource in the cultural repertoire of Alessi, a manufacturer of traditional household products in metal for the catering trade and the consumer market. Though they described technological innovation as a cultural resource at the industry level, in this research, process and product technological advancement is conceptualised at the individual level.

Receptiveness to Change

When the trajectory of the projects changed, middle managers picked on this cultural resource to enable their actions. This cultural resource appeared to be at the disposal of the individual actors (middle managers) and they deployed it at will. Specifically, from the narrative of the Operations Manager (Manufacturing) who was one of the managers who demonstrated exploratory behaviours such as leading and encouraging change, and adaptability and flexibility on the Optimus project, it was evident that he picked on receptiveness to change as a cultural resource and used this to enable his exploratory behaviours. He suggested that:

> *"Very easily, we have two major customers. GE and Pratt & Whitney. They account for more than 70% of what we are making. From my perspective, we deliver on time, our quality is good, we give them what they want and we are quite flexible in our approach in dealing with them. For example if they decide very late that they want to change something on the machine, we are quite receptive to that. If they also want to come and see something at any particular time, we are open to that. So our culture is quite flexible as a manufacturer and we have processes that can allow for modification and re-specifications. I also try and encourage my team to be welcoming of these customer changes and requests."*

Besides, from the observation of middle managers, it was evident that most of them appreciated receptiveness to new ideas and had a welcoming attitude towards change. This acceptance and encouragement of change was more noticeable on the DAX 4 project. From informal conversation and formal team meetings, middle managers took the time to listen to the ideas and suggestions of their team members and the shop floor operators. Some of these suggestions were incorporated into the process and product innovation activities. Also, it was

evident that middle managers demonstrated a level of tolerance for ambiguity, especially during the second and the third phase of both projects (see Sections 4.2.1.2, 4.2.1.3, 4.3.1.2, and 4.3.1.3). The comments of the Continuous Improvement Manager who contributed to the Optimus and the DAX 4 projects suggests that middle managers drew on receptiveness to change as a cultural resource to shape their behaviours:

> *"I think certain areas of Brush are responsive and open to change. I think there is a desire to change. There are some people who are not so open to change, because they have been here for so long and change is a bit difficult for them. But for most of us, we are receptive to new ideas."*

Similarly the Lean Engineer who contributed to the Optimus project suggested:

> *"We are receptive to change and we value other people's opinions. We also respect our teams' opinions and this allows us to deliver on our strategies as a team."*

Moreover, on the DAX 4 project, the research data suggests that in the perception of many interviewees, middle managers picked on receptiveness to change as a specific toolkit to enable their exploratory behaviours. During one of the interview sessions, the DAX 4 Project Manager simply noted that:

> *"My team is receptive to change; to be able to deliver on the project and support the business, we had to."*

In the same vein, another interviewee on the DAX 4 project, the DAX 4 Electrical Engineer noted that:

> *"I think most people here are open minded and appreciate that sometimes we need to change. I think half of the desire to not want change is the person's attitude, it's not*

driven by any work or data driven, it is by somebody who just doesn't want to do something just because they don't want to do it. If you seat them down as to why they don't want to do it and you tell them why we need to do what we are doing, it's very difficult to argue with facts and logic on the table."

In sum, middle managers selected receptiveness to change from the cultural toolkit to shape their exploratory behaviours on both projects. This was evident from the interview transcripts, the organisational norms, and the rhetoric's which middle managers used to justify their behaviours. This was supported by informal conversations and meetings with some of the middle managers.

4.5.3 Cultural Resources and Ambidextrous Behaviours

The cultural resources which middle managers drew on to shape their ambidextrous behaviours include delivering service excellence to customers, maintaining a reputable brand, teamwork and collaboration, and upholding integrity.

Delivering Service Excellence to Customers

As highlighted earlier, the cultural resources which middle managers drew on from time to time depended on the activities which needed to be achieved at a certain point in time on both the Optimus and the DAX 4 projects. One of the cultural resources that middle managers picked on to shape their ambidextrous behaviours such as multi-tasking, swift decision making, creativity, and developing others was delivering service excellence to customers. This is similar to one of the three working philosophies documented in the organisations handbook which is *"service to our customers*." This working philosophy encourages employees to deliver service excellence to customers at all points during the production and customer interface process. It also encourages employees to put the customer first. A number

of comments from informants on the Optimus project justify this assertion. As an example, the Engineering Resource Manager noted that:

> *"I think a lot of balancing say for example efficiency and flexibility is based on balancing the needs of the business and striving to satisfy our customers. We are always there to support the business to get the machines out of the door and to the door steps of the customers in the right time. We are also flexible within our unit to respond to external changes."*

Other interviewed middle managers on the Optimus project made similar comments which suggest that middle managers selected delivering service excellence to customers as a cultural resource to enable their ambidextrous behaviours. The Continuous Improvement Manager for example noted that:

> *"My core values are drawn from my love for putting people first and in this case Brush's customers always come first."*

The above quote suggest that managers valued the customers and would sometimes go out of their ways to satisfy them. Other interviewed middle managers who shared their views justify the assertion about this cultural resource. As an example, a Lean Engineer and the Chief Insulation Engineer who both worked on the Optimus project commented respectively that:

> *"Well, the customer is very much king here, so we have to put them first. When you've got GE as such a big customer, which they're well aware of, GE are arrogant, they're aggressive, and they're very typical. Their behaviour shows quite extremes and they will use considerable bullying tactics to get what they want. So we can get put under quite extreme pressure by the customers and the customer always then uses the threat*

of involving senior management to try and influence middle-management to do what the customer wants. That happens quite a lot. But we always try to satisfy them."

"I don't work for brush, I work for the customer. If the customer is happy, brush is happy, I am happy. If the customer is happy it means that we are getting more business. If you can keep the customer happy though quality and safety, and good response time, they will always come back. It's a proven winner."

A review of the data from the transcribed interviews on the DAX 4 project also revealed that middle managers drew on delivering service excellence to customers as a cultural resource to enable their ambidextrous behaviours. The Operations Manager (Stator) suggested that satisfying the customers was of paramount importance across the organisation. He noted that:

"Customer changes and requirements leads to changes, it has on this project; for example in processes, in attitude, in designs and everything. Customer comments are taken on board very strongly. I've got 35 years of experience in process but if you understand my background, I've been in the car industry 15 years, worked for London Taxis, you know the black cabs, we used to manufacture them, for 10 years. I worked for Bombardier in Derby for 8 years. I worked for a furnishing company who do Ikea and Centre Parcs, installation, and then I've worked here so I've had a quite varied career path, so lots of experience. Some managers are academic, come straight from university and gone into production so that's different. Other managers have always been in generator, they have not been anywhere else. So there's quite a mix there. But the core value we all share is satisfying the customers, this is the most important to Brush."

The above quote demonstrates that most of the middle managers who contributed to the DAX 4 project had a shared understanding of satisfying the customers. This cultural element

influenced their ambidextrous behaviours on the DAX 4 project. Moreover, from the researcher's observation on the project, it became evident that there were lots of employees, not just middle managers, who are very proud of the organisation, and of their own workmanship and achievements. The Operations Manager (Manufacturing) commented that:

> *"We've got three or four large clients who are absolutely mission critical. We absolutely ensure that we look after those clients throughout the whole stage of their relationship with Brush. So it is very much about the client management and of course, our core value which encourages customer satisfaction. We want our dealings with our customers to be that of a seamless transition, from the sale of product, through to the aftermarket lifecycle care that the aftermarket function delivers."*

When comparing the above quote with the narratives from some of the other interviewed middle managers, it appeared that when dealing with customers, middle managers tried to resolves their queries and provided them with excellent service. In situations where the needs of some customers could not be met directly by any contacted middle manager, they used the escalation route within the business. These escalation routes ensured that solutions were sought from other departments or teams in a bid to satisfy the customers. So seeking assistance was clearly evident on the DAX 4 project with the end goal of customer satisfaction. Also from the observations, it was evident that middle managers had a very clear understanding of what was important to their customers. For example, they frequently conducted Voice of the Customer (VOC) analysis which gave the organisation invaluable data around what is, and more importantly what isn't important to the customers. For example, The DAX 4 Project Manager suggested that:

> *"Defining what is truly important to our customers' means we can stop doing the things they don't value and focus our resources on the things they do."*

The researcher observed that the DAX 4 Project Manager in particular valued both internal and external customers. She always encouraged her team to give the customer (both internal and external) everything they need on time and in good quality. The perception of many interviewees suggests that delivering service excellence to customers was selected from the cultural toolkit and used to enable middle management's ambidextrous behaviours (e.g. multitasking, creativity, developing others and swift decision making) on both the Optimus and the DAX 4 projects.

Maintaining a Reputable Brand

An analysis of the transcripts of interviews conducted by the researcher suggests that another cultural resource which was available to middle managers to enable their ambidextrous behaviours was maintaining a reputable brand. Sathe (1983) reveals that values represent preferences for more ultimate end states; for example, striving to be the number one. This seemed to be the case in the researched organisation. Not only do they strive to continually be the best, they also valued maintaining the reputation of the Brush brand. During the six month period that the researcher was on site at the Brush factory, it was clear that the organisation prides itself on providing a very high quality service and very high quality products. The Brush product, especially the generators are better than most of their competitors', and most of the top customers in the industry patronise Brush irrespective of their premium prising strategy. In the perception of many interviewed middle managers on the Optimus project, maintaining the Brush brand seemed very important to them. As an example, a Lean Engineer noted that:

> *"I think the product speaks for itself in many ways, it is a good quality product that we are making. The volume we are selling, if it's a bad product, pretty soon, the sales will dry up. In the gas turbine world, we are very much like the Rolls Royce. We are*

not the cheapest, but we have a very well designed and quality product. We sell on the basis of quality and we always sell quality. The day the world ends, someone will buy Rolls Royce, because people love quality. In all we do, we always want to maintain this standard that we are known for."

In support of the above, the Operations Manager (Engineering) simply asserted that towards the end of the Optimus project they focused on improving the lead time because asides maintaining the quality, they also wanted to continue to satisfy the customer. He noted that:

"We were keen in maintaining the quality and our standard and we are proud of our work. I think we are in a good position and it is important that we maintain that."

From the narrative of the Operations Manager (Manufacturing), it can also be deduced that they valued the Brush brand, and in enabling their ambidextrous behaviour such as multitasking, they picked on this cultural resource of maintaining a reputable brand. He suggested that:

"Presently, our products are one of the best brands for quality, delivery and performance in the world. That doesn't mean to say we would be there in that category in the next 10 years. Because we need to look at improving that capability, because everything changes. Because someone out there is watching and improving, they are trying to do it better. They may not be able to do it better in the first 5 or 6 years, but latter on if we stand still, they will overtake us. We need to maintain our standard. Having said that, our product at the moment is good, but we can improve on it, the way we can do that is to continue to change and adapt, and product at the right quantity faster, everybody will pay to have our product and our service, because we are the fastest to deliver."

The ‘quality’ which middle managers referred to was not just about the quality of the product, but also about the quality of contact and how easy Brush is to do business with. This also includes the quality of response to customer concerns, their ability to provide them with technical expertise that delivers a high performance product through superior design and engineering. The researcher while observing middle managers during meetings on the DAX 4 project and specifically when they demonstrated ambidextrous behaviours noticed that the approach to delivering the strategy of the DAX 4 project was based on some of the middle managers selection of this cultural resource. Thus, their ambidextrous behaviours were based on the emphasis of quality and making the right decisions to continue to maintain the strong brand which Brush already has.

Teamwork and Collaboration

During the interviews, middle managers working on the Optimus project made several comments which suggested that there was an appreciation of team efforts and collaboration across the factory. As an example, the Operations Manager (Engineering) who contributed to the Optimus project suggested that:

> *“The physical relocation of staff from their departmental offices to open work areas within the production environment engendered a feeling of team spirit and eliminated the “us and them” culture that was so prevalent between some departments. More than ever before, we now have a culture where teams work together to iron out difficult issues.”*

The above quote seems to suggest that working as a team was hugely valued across the Brush factory. Middle managers used this cultural resource to enable their behaviours during the orchestration of activities at various phases of the project. Another middle manager, the Operations Manager (Transformer) suggested that:

"We try to understand issues before we resolve them. It may be between departments or individuals. You have to give all the parties a chance to express themselves. We then sit around and resolve the issues. If you don't work as a team, you are going nowhere, and I mean the whole organisation, not just individual departments. So we work for one another, not against one another."

Correspondingly, on the DAX 4 project, middle managers made comments which suggested that teamwork and collaboration was a cultural resource within the organisational toolkit which managers used at will during the three phases of the project. Some of the middle managers noted that collaborating with other managers and employees from other departments, even those not on the project they were working on was very important to them. They spoke about an appreciation of collaborating with other departments and units outside their own teams. A Project Manager who contributed to the DAX 4 project for example asserted that:

"We were too departmental in our thinking and people only used to fight for their areas. But overtime, this has changed. This habit of working together has assisted us a lot on the project."

In addition, other managers clarified that within the factory, there isn't any department as such and that everyone is in the same team. The narrative offered below by the DAX 4 Mechanical Engineer justifies this claim. He noted that:

"It's a team, we're a team. So for example, if one department fails, it's not that department that fails, it's the whole business that has failed. Moreover we have this belief that it is not only our team who is failing if we fail, along with ours, there are

ten more departments that will fail for example. So you have to take that into account. People understand that we are more of a team, not a department."

The quotes presented above from comments made by middle managers during the interview sessions as well as the observation of managers during the orchestration of organisational activities suggest that most of them understand that each department or unit is supporting the others. So middle managers used teamwork and collaboration as a cultural resource to enable their ambidextrous behaviours during various phases of both projects.

Upholding Integrity

Another cultural resource which middle manager used to enable their behaviours during the orchestration of organisational activities was upholding integrity. This cultural resource is similar to one of the working philosophies of the organisation which is *integrity first.* The identified exploratory, exploitative and ambidextrous behaviours of middle managers at various phases of both the DAX 4 and the Optimus projects was because of an appreciation of this organisational rhetoric and because most of the middle managers shared a belief of operating to the highest standard of ethics. As an example, the Engineering Resource Manager who contributed to the Optimus project asserted that:

"We always do what we say we'll do. We never over promise and we never promise something we can't deliver, we promise what we can deliver and do it. These are some of the things that have kept us in business."

Also, the Operations Manager (Manufacturing) narrated that:

"When customers come to us and said, "Look we need this doing", we usually then look at our plan and see if we can do that for them within that time. Now if it means doing some modifications or putting in an urgent machine within the plan, even

though we have to do overtime, or be more flexible, we look at that and usually try to do that for our customers, because obviously they're the most important assets we've got. Having said that, we are also honest; if we cannot do it we tell them, but we will tell them when we can. On the other hand when we had quality issues that affected the delivery and it's our issue, we usually do everything we can again to make sure that we recover and still deliver on time. So on most occasions we do bend backwards to protect our integrity."

From the narrative of the Operations Manager, it can be suggested that they selected upholding integrity as a cultural resource to enable their behaviours on the Optimus project. Middle managers demonstrated exploratory, exploitative, and ambidextrous behaviours at different phases of the project because of an appreciation of this resource and because they valued the relationship with the customers.

Likewise, on the DAX 4 project, the DAX 4 Electrical Engineer suggested that:

"….it is better to address a problem and come to a win win situation as best as you can. So we try and be honest to ourselves and to our customers in all circumstances."

The above account isn't any different from the views of the Continuous Improvement Manager who asserted that:

"We're always very careful to make sure that we've only been promising what we know we can deliver. When customers make modifications, we make judgement and decide if it's something we can help the customer with at that point in time. We check if we have current manpower and resources and if we can't do the work, we are honest. If we can't deliver, we tell them when we can, if they can wait."

Also, the DAX 4 Project Manager suggested that:

> *"I am always honest with myself, my team, and my senior manager. I don't relay wrong information and I don't hide anything from anyone. Sincerity and honesty are some of the things we appreciate here."*

To sum it up, at various phases of the DAX 4 and the Optimus projects, middle managers picked on upholding integrity as a cultural resource to shape their behaviours. *Integrity first* which the researcher discovered was widely valued across the factory may have been a reason why middle managers used this resource in the pursuit of diverse objectives during the orchestration of organisational activities.

Summary of Chapter

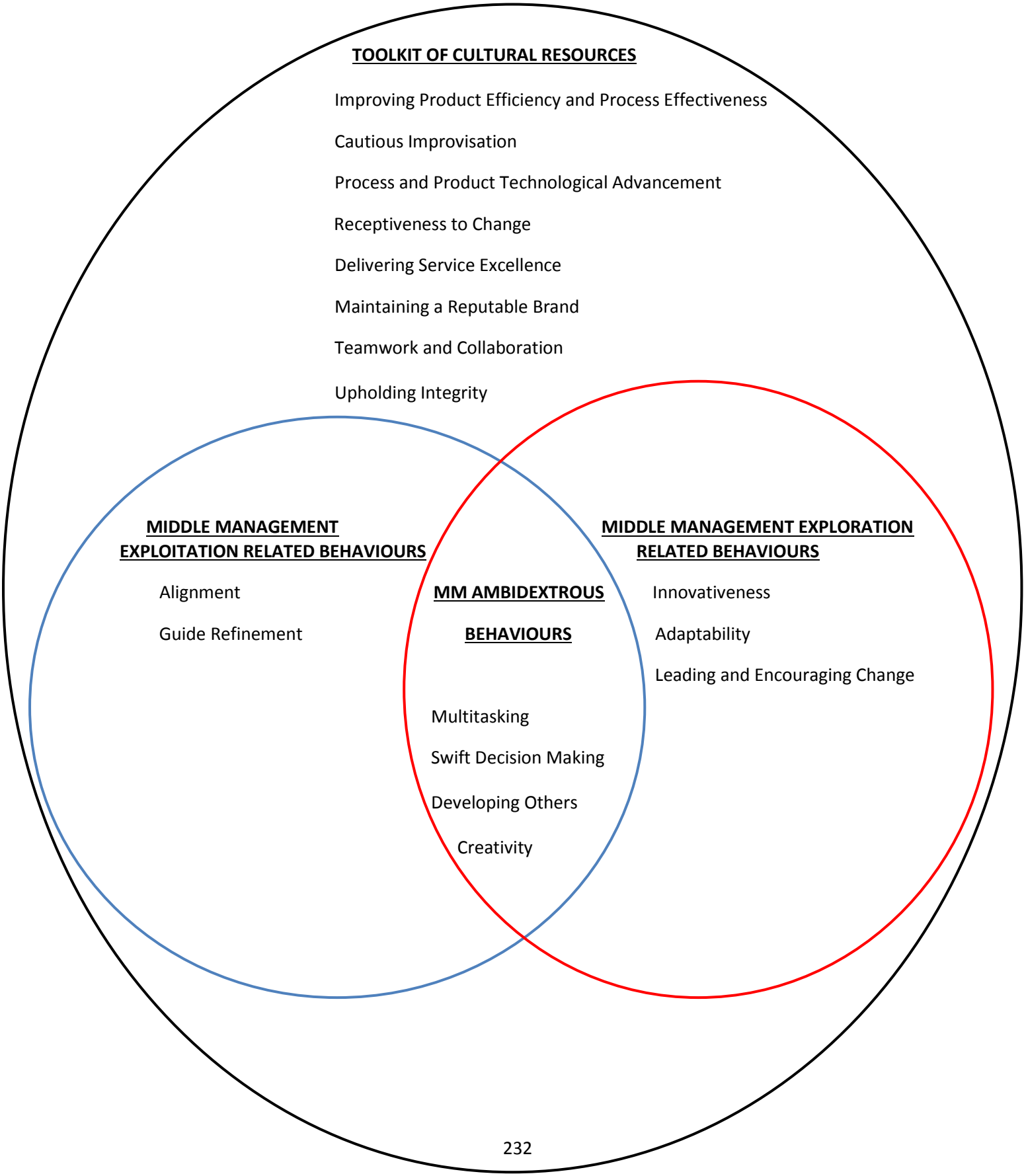
The aim of the research was to increase the understanding on organisational ambidexterity by investigating middle management actions and behaviors and importantly, how these behaviors are shaped by cultural resources. In this chapter, the researcher presented a detailed description of the research findings from the Optimus and the DAX 4 projects. The findings presented reveal the activities of middle managers, the behaviours demonstrated, as well as the cultural resources which middle managers used to enable their behaviours on the projects. Figure 8, as shown below depicts middle management exploitation related behaviours, middle management exploratory related behaviours, and middle management ambidextrous related behaviours.

As clarified earlier in section 2.10.1, the concentric circles illustrate the multi-level nature of the thesis. Based on the detailed research framework presented in figure 8, the identified cultural resources is the driving force behind the exploratory, exploitative, and ambidextrous behaviours of middle managers. These cultural resources include improving product

efficiency and process effectiveness, and cautious improvisation (used in shaping exploitative behaviours of middle managers as presented in section 4.5.1), process and product technological advancement, and receptiveness to change (used in shaping exploratory behaviours as presented in section 4.5.2), delivering service excellence, maintaining a reputable brand, teamwork and collaboration, and upholding integrity (used in shaping ambidextrous behaviours as presented in section 4.5.3). Thus, the cultural resources shaped middle managements exploitative, exploratory and ambidextrous behaviours on both the DAX 4 and the Optimus projects.

The findings presented in this chapter will be discussed in detail in the discussion chapter (chapter 5). These findings will be discussed in light of extant organisational ambidexterity, organisational culture and middle management literatures.

Figure 8: Detailed Research Framework.



CHAPTER 5

Discussion

5.1 Introduction

This thesis identifies specific behaviours which allowed ambidexterity in practice to be uncovered. It also identifies unique cultural resources used in the context of exploitation, exploration and ambidexterity.

The findings contributes to the study in several ways. First, the findings contributes to the study by underpinning the important contributions of middle managers in orchestrating ambidextrous strategies. Figure 1 (presented in chapter 2) depicts a typology of middle management involvement in strategy. From the figure, Floyd and Wooldridge (1992) suggests championing alternatives and facilitating adaptability as middle management divergent roles and implementing deliberate strategy and synthesising information as middle management integrative roles. The findings from this study contributes to our understanding of middle management's divergent and integrative roles. Middle managers on both the DAX 4 and the Optimus projects demonstrated exploitative (integrative) and exploratory (divergent) related behaviours which were necessary for the success of both projects. Importantly, they demonstrated the cognitive ability to be able to balance both sets of behaviours by multitasking, making swift decisions, developing others, and by being creative when necessary as seen in figure 8 (presented in chapter 4). Thus, the findings contribute to the study by revealing that middle managerial ambidexterity is possible in practice. However, these behaviours were shaped by the cultural resources within the organisation. Underpinned by Swidler (1986)'s conceptualisation of cultural resources, the findings contributes to an understanding of how individuals may use cultural resources as a practical toolkit especially during the orchestration of ambidexterity.

Thus, the thesis takes the perspective that organisational culture should be viewed as heterogeneous and not homogeneous (see Weber and Dacin, 2011). These findings contribute

to a better understanding and extend existing theory on organisational ambidexterity, middle management's contribution to strategy in organisations (especially during the orchestration of ambidexterity) and to the organisational culture research (see Swidler, 1986; Weber, 2005; Kellogg, 2011; Leonardi, 2011).

What follows is a discussion on the micro-foundations of strategy and how this thesis fits into the current theoretical discussions. Subsequently, the findings presented in the previous chapter (chapter 4) and summarised above will be discussed under three main sections. In the first section, the researcher will discuss the findings in light of the extant organisational ambidexterity literature. In the second section, the researcher will discuss the findings in light of existing organisational culture literature, while in the third section the researcher will discuss the findings in light of the middle management literature.

5.1.1 Microfoundations of Strategy

There are recent and frequent calls for microfoundations in the extant organisational, management, and strategy literatures. For example, in strategic management, there are calls for identifying the microfoundations of competitive advantage (see Coff and Kryscynski, 2011). Johnson et al. (2003) calls for more concentration on the activity based view that emphasises micro organisational processes and practices of key actors within firms. In organisation theory, there are calls for research on the microfoundations of organisational learning and behavioural strategy (see Greve, 2013). In the micro organisational behaviour literature, scholars such as Kozlowski and Chao (2012) have called for more research into the microfoundations of collective-level constructs such as group cohesion and knowledge. Current research suggests that the individual is the basic building block of social theories (see Swedberg, 2007). In essence, individuals' beliefs, preferences and interests provide a fruitful starting point from which to build theories of how social structures originate and evolve over

time (Barney and Felin, 2013; Foss and Lindenberg, 2013). Abell et al. (2008) suggest that there are no conceivable causal mechanisms in the social world that operate solely on the macro-level, especially in strategic management. The position these scholars take is associated with methodological individualism which suggest that the explanation of firm-level (macro) phenomena must ultimately be grounded in explanatory mechanisms that involve individual action and interaction. As suggested by Coleman (1990) and cited by Barney and Felin (2013), rather than simply postulate and point to the existence of collective things such as structure, culture, institution, organisation, market, or society, the precise job of the social scientist is to explain the origins of the macro as the result of individuals and their interactions. Barney and Felin (2013) also suggest that to understand any collective phenomenon, there is a need to understand the constituent parts that make it up, i.e. unpacking the collective givens. However, Barney and Felin (2013:141) suggest that "*microfoundations are not solely about individuals and individual interactions are not simply additive, they can take on complex forms and lead to surprising aggregate and emergent outcomes that are hard to predict based on knowledge of the constituent parts.*"

They argue that the call for microfoundations is a methodological point about looking at lower-level constituent units when explaining higher levels of analysis. Barney and Felin (2013) suggest that in the domain of management, organisation theory and strategy, aggregation is the *sine qua non* of microfoundations, as such organisational analysis should be essentially concerned with how individual level factors aggregate to the collective level. Foss and Lindenberg (2013) also postulate that from the point of view of pragmatic management research, microfoundations matter because they furnish substantive implications for theory building that truly matter to practitioners.

Therefore, this thesis answers calls for more research which focuses on the microfoundations in organisations by focusing on organisational ambidexterity at the middle managerial level. Research suggests that ambidexterity is of imminent importance to the competitive advantage of organisations and ambidextrous organisations are likely to achieve superior performance relative to organisations emphasising exploration at the expense of exploitation or exploitation at the expense of exploration. The research on ambidexterity initially focused on two main levels. These are ambidexterity at the organisational level as discussed in the works of Duncan (1976), Tushman and O'Reilly (1996), Benner and Tushman, (2003), He and Wong (2004) and O'Reilly and Tusman (2007), and ambidexterity at the business unit level as captured in the works of Gibson and Birkinshaw (2004) and Wang and Rafiq (2012). Recently, this research focus has been extended to ambidexterity at the managerial level (e.g. Mom et al., 2007, 2009).

Furthermore, research suggest that organisations should seek a balance between exploration and exploitation (e.g. March, 1991; Andropoulos and Lewis, 2009; Turner et al., 2012), but there is no overreaching research which explains how this balance may be orchestrated at the middle managerial level. There is currently limited conceptual and empirical validated studies and theorisation regarding individual managerial ambidexterity (especially at lower levels of the organisational hierarchy) and what this means in practice (see Turner et al., 2012; Raisch and Birkinshaw, 2008; Mom et al., 2009). Scholars have suggested that there is a need for greater insight into how managers implement and manage ambidextrous strategies across organisations (see O'Reilly and Tushman, 2011). Nosella et al. (2012) also call for an investigation into how ambidexterity really emerges by looking at the internal working of specific routines which could provide the micro-foundations and key mechanisms used by firms to resolve tensions. This thesis answers the question of how ambidexterity may be orchestrated, specifically at the managerial level. The thesis also makes important

contributions by identifying specific cultural resources which managers used to enable their ambidextrous behaviours. As highlighted earlier, in their discussion on microfoundations, Abell et al. (2008) suggest that there are no casual mechanisms in the social world which operates solely at the macro-level. Barney and Felin (2013) also point to the necessity of looking at lower-level constituents when explaining higher levels of analysis. Contrasting that with the position of the second wave of cultural analysis (see swindler, 1986) discussed in the literature review (chapter 2), it may be suggested that this lower-level constituent or micro-level analysis advocated by Barney and Felin (2013) and Abell et al. (2008) is similar. Also, as highlighted earlier, the thesis takes the perspective that organisational culture should be viewed as heterogeneous and not homogeneous. Thus, individual managers have the liberty to use cultural resources in shaping their everyday actions and behaviours when orchestrating organisational activities. This is a departure from existing works, for example those of Tushman and O'Reilly's (1996) and Wang and Rafiq's (2012) which perceives cultures influence on managerial ambidexterity as homogenous. The findings of the thesis are discussed in much more details below.

5.1.2 Managements Exploitative Behaviours

March (1991) suggest that central to an organisation's survival is its ability to exploit its current capabilities and assets in a profitable way as well as simultaneously explore new technologies, markets, and customers to capture existing as well as new opportunities. One way by which an organisation can exploit its current capabilities and assets is through the refinement and improvement of their processes, products and capabilities, i.e. engaging in exploitative activities. O'Reilly and Tushman (2004) suggest that the scope of exploitation is cost reduction and profit maximisation while the structures of exploitative businesses are formal and mechanistic. The findings of this study share similarities with the above body of literature. The major strategic intent behind the exploitative behaviours of managers both on

the DAX 4 and the Optimus project was a reduction in the cost of production (i.e. cutting out waste and inefficiencies thus improving internal efficiencies), improvement in lead time (thus improving customer satisfaction) and improvement in order levels (negating a dwindling market share), as well as a maximisation of profit for Brush. This suggests that some managers have a short-term orientation and put plans in place to realise short term objectives (e.g. Birkinshaw and Gibson, 2004). Some of the refinement and improvement activities which managers engaged with during the first phase of the Optimus project were the improvement to the core design, the removal of legplates, and transformer and fan noise reduction (see section 4.2.1.1). Managers planned ahead and guided the refinement activities towards improving the competitiveness of Brush in the short term. This planning stage documented the *'as is'* processes and current performance metrics. This was followed by conducting value added value engineering analysis also followed by problems being identified and solutions developed. Subsequently, trials were conducted and where successful, they were documented, implemented on a wide scale and performance was measured post-implementation. Also, managers encouraged their teams to identify and resolve problems as part of their day to day work. They provided their teams with the knowledge, skills, tools and techniques to allow them improve the way that they work and deliver benefits into the business. The aim of this was to utilise the resources within the organisation to full capacity. However, a major distinction on both projects was that while managers on the DAX 4 project were fully committed, some of the managers on the Optimus project were not fully committed to the strategy of the Optimus project; this had some consequences such as delay in the production process and lateness of some machine parts. This point will be further discussed in section 5.1.4.

On both the DAX 4 and the Optimus projects, in agreement with existing works such as those of Birkinshaw and Gibson (2004), managers demonstrated a clear understanding of how

value should be created in the short term and how activities may be streamlined and coordinated to deliver such value. This claim can be made because managers who aligned to the strategic plans of the projects and guided refinement activities had a very clear understanding of what was important to the customers and to the organisation such as reliable products and improved internal processes. Most of the managers understood that the senior management's focus for improvement was around how to create value for customers, because customers who purchase a high quality product which is delivered on time and is perceived to be good value for money will continue to place repeat business with any organisation.

It must be noted that continuous communication was very critical during the orchestration of the exploitative activities such as the improvements to the core design and removal of legplates and transformer and fan noise reduction and other activities (see section 4.2.1.1 and 4.3.1.1). Literature suggest that rich communication among top management team members leads to better team effectiveness and improves the performance of organisations (see Smith et al., 1994). Current literature also affirms that mechanisms which promote communication across different organisation levels increases performance (see Krishnan and Ulrich, 2001). Ghoshal and Bartlett (1994) suggest that alignment is achieved through establishing clear performance standards, creating explicit task objectives and promoting fast feedback cycles through constant reviews. Moreover, Gibson and Birkinshaw (2004) argues that higher levels of alignment between the strategic and project levels promote consistency and clarity of the exploration and exploitation goals across hierarchies, and makes more likely that organisational members work together towards the same goals. Thus, the findings of the thesis builds on existing literature which describes the importance of communication. Communication on both the DAX 4 and the Optimus projects was enhanced through the use of visual management which gave front line operators all the information needed to make the right decisions about what to improve and how to improve it.

In enabling and shaping these exploitative behaviours, managers selected some cultural resources which had influences for both the DAX 4 and the Optimus projects. For example, in enabling the exploitative behaviour (guiding refinement), managers spoke about their appreciation for high quality manufacturing (a norm across the business), and continuous advancement in the production processes (a shared value). Most of the middle managers also openly embraced improvements in processes and the products. Some of the values which also influenced or informed the identified exploitative behaviours of managers include the sense of urgency which is naturally not there across the business, and the conservative nature of the industry. These norms, values and beliefs widely shared across the organisation enabled management's exploitative behaviours and are conceptualised as cultural resources (improving product efficiency and process effectiveness, and cautious improvisation). These cultural resources are discussed in much more detail in section 5.2.

In summary, scholars suggest that to flourish, organisations need to continuously pursue incremental innovations and improvements in their existing products and processes which may allow them operate more efficiently and deliver even greater service to customers (e.g. O'Reilly and Tushman, 2004; March, 1991). The findings from this thesis identifies exploitative behaviours such as alignment, and guiding refinement as behaviours necessary for successful project implementation and improved competitiveness for organisations in the short term. The improvement and refinement activities which were orchestrated covered important areas of the business and it turned out to be an enabler of cost control, profit margin attainment and satisfying the customers through timely delivery of products which offered more benefits.

5.1.3 Managements Exploratory Behaviours

March (1991) suggest that exploration includes things captured by terms such as search, variation, risk taking, experimentation, flexibility, discovery and innovation. Andripoulos and Lewis (2009) describes exploration as experimentation efforts with the aim of generating novel recombination of knowledge. Other scholars such as Chandrasekaran et al. (2012) suggest that exploration involves activities aimed at entering new product and process domains. Also, March (1991) emphasises that the fundamental adaptive challenge facing firms is the need to both exploit existing assets and capabilities as well as provide for sufficient exploration to avoid being rendered irrelevant by changes in markets and technologies. In agreement with the above extant literature, this case study reveals some exploratory behaviours of managers specifically at the micro level which were useful for the organisational renewal and transformation of Brush.

As the DAX 4 and the Optimus projects progressed, there was a radical transformation of the strategies of both projects. It must be noted that these transformations were mainly due to customer requirements and re-specifications. Some of these customers were existing customers while others were new customers. Thus managers had to behave in ways consistent with promoting the adapted strategies in a bid to meet the needs of the customers. These behaviours include innovativeness, adaptability, and leading and encouraging change. Some of these behaviours share similarities with existing literature, while others build on current knowledge on organisational ambidexterity. For example, scholars such as Benner and Tushman (2003) and He and Wong (2004) have explicitly embraced the idea that exploratory innovations are designed to meet the needs of emerging customers or markets. They suggest that it requires new knowledge or departure from existing knowledge and the pursuit of new technological and customer competences which offers new designs and procedures. Managers on both the DAX 4 and the Optimus projects demonstrated innovativeness by

departing from the paths which had been already charted, i.e. from the normal routines. For example, not only did managers align to the strategic plans which were already created and guided refinement activities, they also challenged and encouraged their teams to challenge the status quo and the "we've always done it this way" mentality on both the DAX 4 and the Optimus project. They also encouraged their teams to seek new solutions, reconsider the existing processes and integrate the new discoveries with existing processes. Though the findings as per innovativeness from this case study share similarities with existing studies identified above, the case builds on existing knowledge, especially at the middle managerial level.

Once change occurred through various adjustments on the projects, managers orchestrated exploratory activities through the cultural resources selected. For example, most of the interviewed managers seemed to value and spoke about the continuous generation of new ideas, had an appreciation for fresh insights as regards the production processes, flexibility as a manufacturer (in a bid to satisfy the customers), and were welcoming and open to change. Moreover, these managers also routinely generated imaginative alternatives and were willing to experiment. As highlighted in chapter four, these norms, values, routines and justifications were collectively conceptualised as the cultural resources (process and product technological advancement, and receptiveness to change) which managers used to enable their exploratory behaviours. It must be noted that in enabling the identified exploratory behaviours, the cultural resources which managers chose were different from those selected to enable their exploitative behaviours, discussed earlier. The two cultural resources used to shape and enable management's exploratory behaviours are discussed in much more detail in section 5.2.

Further, Walrave et al. (2011) assert that in today's economy, product life cycles are becoming increasingly shorter while product complexity continues to increase. This has resulted in an increasingly dynamic and competitive landscape in many industries. Walrave et al. (2011) also suggest that business performance largely depends on an organisational ability to change and innovate (i.e. explore). Moreover, Siren et al. (2012) suggest that managerial failure to detect environmental changes, and subsequent failure to adjust the strategy is often mentioned as primary cause of organisational decline. The findings from this thesis provides evidence to suggest that managers may be in a position to adapt the strategies of their organisations (specifically projects) through their behaviours. This claim can be made because most of the managers who contributed to the DAX 4 and the Optimus projects assisted in the adaptation of the strategies of the projects. Structures, processes and design/performance features of the transformer as well as generator products were adapted.

Particularly on the Optimus project, managers were able to identify areas of concern of customers about the transformer products, services and solutions. On the project, managers were able to pin point areas of deficiencies in the organisational processes, practices and routines. Assumptions and beliefs which had gone unchallenged and unquestioned for many years were challenged and adapted. For example, the assumption that the vacuum filling of the transformer tanks may reduce the quality of the transformer product was a major shift from the historic production process which had been in place since the 1970's (see section 4.2.1.3). On both the DAX 4 and the Optimus projects, processes which had always been done the same way within the production circle were questioned and alternative processes were proposed, tried, and implemented. Traditions which often blocked potential innovations because people were reluctant to abandon the tried and tested methods were also questioned and reviewed. These reviews were mainly done to meet customer requirements and re-specifications which were changing. Moreover, adjusting the organisational and project

structures was done to ensure that there were no idle hands and to ensure that operators were drafted to where they were needed most to increase flow. Not only were structures adjusted, some functions were also outsourced completely to reduce waste and inefficiency specifically during the second phase of the Optimus project (see section 4.2.1.3).

Additionally, research suggests that exploration creates adaptability by developing new offerings (i.e. long-term flexibility) (see Benner and Tushman, 2003; Jansen et al., 2006). Levitt and March (1988) also suggest that exploration creates and preserves the requisite knowledge necessary for the organisation to sustain its learning in the long term. This thesis claims that perhaps managers who have a long term orientation are in a better position to demonstrate exploratory behaviours. This claim can be made because most of the managers who demonstrated exploratory behaviours can be described as managers who understood the longer vision of the organisation. These managers encouraged innovation and change by promoting variance in the accepted routines and processes. Besides, the changes on the projects did not happen as fast as some of the managers would have wanted them to happen. It must be noted that change within the organisation is slow and managers had to urge their team members to speed up some of the activities and processes. Managers who demonstrated exploratory behaviours on both projects also clarified that they led by example, hammered on results which had been achieved so far, as well as encouraged their teams to embrace change. This was even more pronounced by managers who had to deal with unresponsive front line operators who resisted change.

Overall, the current findings imply that exploratory behaviours are necessary when project objectives change or when they are adapted. These behaviours assisted in meeting the changing needs of the customers thus ensuring that the organisation remains competitive in the face of changing market needs. Importantly, as highlighted earlier, managers who

demonstrated these exploratory behaviours selected two cultural resources from the organisations cultural toolkit to shape and enable their actions and behaviours.

5.1.4 Managements Ambidextrous Behaviours

Research suggest that ambidextrous managers must manage contradictions and conflicting goals (e.g. Smith and Tushman, 2005), engage in paradoxical thinking (e.g. Gibson and Birkinshaw, 2004) and fulfil multiple strategic roles (e.g. Floyd and Lane, 2000). However, Gupta et al. (2006) argued that it is challenging for an individual to excel at both exploitation and exploration. Correspondingly, Raisch et al. (2009) suggest that the possibility that individuals can take on both exploitative and explorative tasks creates a number of challenges that needs addressing. Raisch et al. (2009) also suggest that some studies observe that some managers are able to take on contradictory tasks (e.g. Smith and Tushman 2005), but these studies fail to explain why these managers are able to do so.

Mom et al. (2009) suggest three characteristics of ambidextrous managers. These include hosting contradictions, multitasking, and refining and renewing knowledge, skills, and expertise. The findings from this research are consistent with these characteristics identified above as well as with the assertions of Smith and Tushman (2005), Gibson and Birkinshaw (2004) and Floyd and Lane (2000). However, this thesis goes further by contributing to the existing research on organisational ambidexterity, particularly at the managerial level of analysis. The findings reveal that some of the middle managers demonstrated high levels of exploratory behaviours as compared to exploitative behaviours, and vice versa, while other middle managers demonstrated high levels of both exploratory and exploitative behaviours simultaneously i.e. ambidexterity. Specifically, the findings reveal that some middle managers are able to engage in multiple activities and orchestrate ambidexterity at the micro

level through behaviours such as multitasking, swift decision making, creativity, and developing others.

This thesis claims that managers who are customer orientated and have an entrepreneurial spirit are in a better position to orchestrate ambidexterity. This was evidenced in the cultural values drawn upon by some of the middle managers. Moreover, this claim can be made because some of the interviewed managers expressed candid views about the importance of satisfying the customers. For example, in section 4.4.3, it was highlighted that the interviewed managers demonstrated an ability to both align to the existing processes as well as adapted where necessary in a bid to satisfy the customers. They also juggled the production time and activities on the DAX 4 and the Optimus projects in a bid to meet the needs of the customers as fast as possible. Managers were creative in terms of new designs based on the suggestions of the customers, but they were also rigid when it came to following existing processes. This claim can also be made because managers who orchestrated multiple organisational activities which eliminated waste and improved the products did these to ensure that benefits were delivered to the bottom line. These managers developed novel and bespoke solutions on a customer to customer basis. They also developed and implemented processes to deliver tangible results in the short term while exploring and implementing processes which may secure sustainable competitive advantage for the organisation on a long term basis.

In section 5.1.3 and 5.1.4, it was highlighted that middle managers picked on several cultural resources to enable their exploitative and exploratory behaviours respectively. Several cultural resources also allowed managers to orchestrate ambidexterity, as reflected in their ambidextrous behaviours. The cultural resources which allowed managers to orchestrate ambidexterity include delivering service excellence, maintaining reputable brand, teamwork

and collaboration, and upholding integrity. These cultural resources are conceptualised from the norms, values, beliefs, justifications and stories which managers used to enable their everyday actions (see Swidler, 1986). For example, managers had a shared value of striving to satisfy the customers and putting them first. Also, managers justified their ambidextrous behaviours by saying that the Brush business has a very strong brand and that they would like to maintain the reputation of the brand. There was also justifications for their behaviours based on the belief that if they don't improve the quality of their products and processes, the competitors in the industry may chase them out of business in the near future. Another value widely held across the business was an appreciation of working together as a team, not independently; this is because they believe that if one department fails, it is the whole business that would be negatively affected. These values, norms and beliefs conceptualised as cultural resources are further discussed in the next section. The findings as per the ambidextrous behaviours demonstrated by managers are discussed below in much more detail.

Multitasking

The findings of this thesis reveal that while middle managers aligned to the objectives of the respective projects as well as guided refinement activities which they were working on, they also engaged in some divergent activities within the business environment due to customer re-specifications and changes. Although these middle managers found these multiple activities daunting, they still dealt with the conflicting demands. As highlighted earlier, though scholars such as Smith and Tushman (2005) and Gibson and Birkinshaw (2004) assert that some managers seem to be able to take on contradictory tasks, ambidexterity theory fails to explain why these managers are able to do so at the micro-level. This thesis found that multitasking is an important behaviour through which managers can orchestrate ambidexterity at the micro level.

This thesis also argues that perhaps managers who have a strategic perspective of the over-all goals of the organisation are in a better position to orchestrate ambidexterity. This claim can be made because in section 4.4.3, the DAX 4 project manager suggested that she multitasked on the DAX 4 project because she understood the strategy of the project and the position where the organisation wanted to be in terms of competitiveness in the industry. Thus, she executed multiple activities simultaneously so as to meet deadlines and deliver on the objectives of the project. Moreover, middle managers who multitasked on the DAX 4 and the Optimus projects demonstrated an ability to take the longer term into consideration as well as develop broad scale short-term objectives during the implementation of the strategies for both projects. This is similar to the assertion of O'Reilly and Tushman (2004) about managers having both a short-term and a long-term orientation. These middle managers demonstrated an understanding of how their own roles (including their teams) contributed to the overall organisational objectives. The case study also reveals that these managers from time to time used their knowledge of Brush's business to identify and take actions on key issues relating to their roles. Importantly, not only did these middle managers multitask, they also encouraged their teams to multitask as well. In addition, these managers provided their teams with a strategic perspective in a bid to ensure that they understood the over-all picture of what they were trying to achieve. This assisted the teams in preparing and reviewing contingency plans for problems and situations which occurred as the projects progressed.

Another salient finding from this study is that most of the managers who demonstrated ambidextrous behaviours such as multitasking were generalists (i.e., they were experienced and knowledgeable on most on the activities which were being orchestrated). From existing literature, contrasting the skills of employees under structural and contextual ambidexterity, (see Birkinshaw and Gibson, 2004), it is suggested that employees orchestrating activities under structural ambidexterity are usually specialists while employees who facilitate

contextual ambidexterity are more generalist orientated. This shares some similarities with the findings of this thesis. This thesis found that managers who were multitasking were not experts in specific fields but were very knowledgeable on a very wide range of organisational activities and processes. The argument that this thesis makes therefore is that managers who are generalists are more likely to engage in paradoxical organisational activities and excel at them.

This thesis also argues that perhaps managers who are able to prioritise organisational activities are in a better position to facilitate ambidexterity at the micro level. The case study reveals that asides demonstrating an understanding of the strategic perspectives and multitasking to realise the short and long term goals, managers who were multitasking were doing so by prioritising the various organisational activities which they were working on. By prioritising, managers were able to stay in control of implementing the strategies of both projects respectively. These managers were seen to usually avoid procrastination and worked under pressure and delivered. Moreover, these managers were great at the art of delegating tasks to their teams to avoid delays in decision making or delays in responding to external customers.

Swift Decision Making

Research suggest that a manager's decision making authority will be positively related to the ability of such a manager to be ambidextrous (see Mom et al., 2009). Correspondingly, scholars have asserted that when a manager's decision making authority is increased, such a manager begins to have a better sense of how to conduct organisational activities and specifically begins to focus more on short term as well as long term issues which may define organisational success (see Tushman and O'Reilly, 1996; O'Reilly and Tushman, 2004). This thesis builds on existing literature by identifying swift decision making as a behaviour

demonstrated by managers which allowed ambidexterity in practice to be uncovered. From the results presented in the last chapter (chapter 4), it is apparent that managers demonstrated an ability to make swift decisions, especially during the second and third phases of both the DAX 4 and the Optimus projects. Asides managers making swift decisions, they also ensured that their teams were able to make swift decisions as well. Managers endeavoured to clarify the roles and responsibilities of their teams as well as the limits of decision making for all team members. Most of the managers who contributed to the DAX 4 and the Optimus projects made quick decisions even while under pressure, either from senior management or from other teams who needed a machine part to be completed and transferred to them. These managers also made decisions without having to necessarily go back to senior management to take instructions before acting. The case study reveals that these managers were hands-on managers who handled the challenges of their teams from time to time with minimal guidance from senior management. It is also worthy of noting that these middle managers appreciated the consequences associated with not making a decision on time and not communicating the affected parties of whatever decisions which were being made. Middle managers acted without being prompted and on their own initiatives; moreover, they took responsibility for their own actions and decisions.

Therefore, this thesis argues that perhaps part of the reason why both the DAX 4 and the Optimus projects were successful was because middle managers made swift decisions based on the information which were available to them whenever decisions had to be made. This behaviour was enabled and justified by managers selecting some cultural resources from the organisations cultural tool kit. Some of the interviewed managers were not just making swift decisions, they were experts at networking and influencing organisational members both up, across and down within the organisation. Noticeably, these managers had some level of influence over some of the major customers. They were excellent at communicating the

expected results to be achieved to senior management and to the customers and were able to mitigate the pressure by assuring everyone concerned that things were under control. They were very good at communicating to other mid-level managers who were responsible for heading other teams.

Furthermore, these managers had the authority from senior management to ensure that the objectives of both projects were realised in a bid to make Brush more competitive, but this authority was within some boundaries. For example in section 4.4.3, the Operations Manager (Engineering) asserted that although he had the powers to change some of the existing processes, this power was within the required boundaries.

Since lead time is a critical factor in terms of competition in the power generation industry, managers working on both the DAX 4 and the Optimus projects implemented fast and definitive solutions to manufacturing and operational issues. They also facilitated robust and cost effective solutions to customers' needs and requirements. This rapid and dynamic response to customer queries as well as the fast and definitive reaction to shop floor problems to ensure production continues serves as an extension and a contribution to the ambidexterity literature. Not only did managers apply their experience and expertise to achieve the objectives of the projects, they also created a sense of urgency to keep up with the pace at which things were changing and at meeting the tight deadlines. Importantly, the research findings reveal that middle managers who demonstrated this ambidextrous behaviour took ownership of what they were doing, understood the strategy and the objectives of the projects, and were not only bold but also seen to have a clear sense of self-motivation.

Creativity

This thesis argues that ambidexterity can be orchestrated at the micro level by managers being creative. In this case study, creative managers gave their teams the needed support to

implement the strategies of both projects and also created an environment of freedom which allowed their teams to be creative in identifying how to improve the respective products they were working on. However, while managers on the DAX 4 project who demonstrated creativity seemed to find it easy to motivate their teams to be creative, some of the managers on the Optimus project who demonstrated creativity found it very challenging to motivate their teams to model this behaviour. This point is further developed in section 5.1.4. When there was an increase in demand for the transformer product during the third phase of the Optimus project (see section 4.2.1.3), the behaviour of middle managers clearly assisted the teams in balancing the planned and emergent activities which were being orchestrated. The consequences of this was a faster turn-around production time which meant that the needs of most customers were met. Also, when the teams had to deal with some challenges on the Optimus project (e.g. transformer parts blowing up or parts being late), manager's encouragement of their teams made a whole lot of difference. In break-down situations where the normal routines could not be followed, manager's creative behaviour became very necessary.

Importantly, managers demonstrated an ability to network with their peers and colleagues from other teams to ensure that the strategies were being properly implemented. Cao et al (2010) suggest that an extensive network of ties enables CEOs to access rich and timely information about an organisation's internal and external environment, and accordingly have a more comprehensive and deeper understanding of the organisation's exploitative and exploratory options than CEOs with a less extensive network. These scholars found that CEO network extensiveness was positively associated with the organisation's ambidextrous orientation. They found that the relationship between CEO network extensiveness and organisational ambidexterity is more pronounced when the CEO communicates well with the other top management team members. The findings of this thesis extend this research to the

middle management level. Specifically on the Optimus project, maintaining continuous production and delivery schedules was reliant on the efficient flow of product through each production stage. Waiting times, delays and bottlenecks were eliminated through networking by managers during project implementation. These managers created flows and ensured that the utilisation of the workforce was maximised, non-value added costs were minimised and lead times for both individual processes as well as the end-to-end process were also minimised. The result of these was the delivery of added value to both the customer and the business. Without managers leveraging on their internal networks, perhaps both the DAX 4 and the Optimus projects may have failed to achieve some of their objectives.

Summary

In summary, the case study reveals that while managers encouraged their teams to demonstrate the discipline needed to engage in routinized and standardised activities, they also encouraged them to be innovative and search for news solutions. In other words, while managers focused on the strategic plans which were being implemented, they also made allowance for some adjustments of the strategy and the processes along the way as the projects progressed. The reason why managers did this was mainly because of customer comments and feedback, especially on the DAX 4 project. New designs, improvement of the ventilation and noise levels were some of the customer requirements which had to be taking into consideration as the project progressed (see section 4.3.1.2). These initiatives were clearly not planned when the project started. Asides demonstrating creativity during the coordination of organisational activities, managers were also creative in refining the business strategy, changing the structure of the various teams by moving employees around whilst still ensuring that the discipline to deliver the project was maintained.

Though this thesis shares and contrasts with the vast body of literature such as Duncan (1976), Tushman and O'Reilly (1997) and Adler et al. (1999) which suggests that routine and non-routine tasks can be coordinated through creativity, this case study is an advancement of existing scholarly contributions, especially to the emerging theory on the orchestration of organisational ambidexterity at the managerial level of analysis. The findings from the case study also builds on existing vast body of literature that suggests that ambidextrous managers must manage contradictions and conflicting goals (e.g. Smith and Tushman 2005), engage in paradoxical thinking (e.g. Gibson and Birkinshaw, 2004), and fulfil multiple roles (e.g. Floyd and Lane, 2000). This thesis thus advances this area of research by suggesting how this can be achieved specifically at the micro level. Overall, the case study reveals that the ability of middle managers to make swift decisions, multitask, and be creative was a faster turnaround time as per meetings the needs of the customers thus improving the competitiveness of Brush. Importantly, as highlighted earlier, these ambidextrous behaviours demonstrated by managers were enabled through the cultural resources which they selected from the tool kit at the organisational level. In table 10, the exploitative, exploratory and ambidextrous behaviours of the interviewed middle managers are summarised. In the next section, the findings as per the cultural resources which enabled different managerial behaviours on both the DAX 4 and the Optimus projects are discussed.

Middle Management Exploitative Behaviours
Alignment
Guide Refinement
Middle Management Exploratory Behaviours
Innovativeness
Leading and Encouraging Change
Adaptability
Middle Management Ambidextrous Behaviours
Multitasking
Creativity
Developing Others
Swift Decision Making

Table 10: Summary of Middle Management's Exploratory, Exploitative and Ambidextrous Behaviours.

5.2 Cultural Resources drawn upon by Managers

The first wave of cultural analysis directly examined and theorised processes and structures at the collective level of analysis. Most early organisational research emphasised cultural persistence and coherence (see Weber and Dacin, 2011). Organisational culture was seen as homogeneous, all encompassing, fairly stable and internalised constraints on individual thought, actions and behaviours (Dacin and Weber, 2011). Though scholars in this first wave of analysis made important contributions, recent research focuses on how individuals and organisations use cultural resources as a practical resource. Some examples of these works include those of Swidler (1986), Weber (2005), Kellogg (2011) and Leonardi (2011). For example, notions of cultural toolkits (see Swidler, 1986) reveals that organisational culture is

not homogeneous, as such individuals and groups have a degree of choice in their use of cultural resources. These resources are heterogeneous and the common cultural register of resources at the collective level serves as a resource that enables different cultural repertoires at the actor level (see Weber 2005; Dacin and Weber, 2011).

The cultural toolkit of an organisation is a grab bag of norms, beliefs, values, frames, rituals, ceremonies, gossip, stories, jargon, rhetoric, humour, justifications and routines which organisation members use to shape their actions as they engage in organisational activities (see Swidler, 1986; Weber, 2005; Kellogg, 2011; Leonardi, 2011). Research also suggest that culture provides the materials (toolkit of resources) from which individuals and groups construct diverse strategies of action (see Swidler, 1986). The findings of this thesis (specifically how middle managers used cultural resources to enable their behaviours) build on this important body of literature. In this section, specific cultural resources that facilitate exploitation, exploration and importantly, ambidexterity are highlighted and discussed in what follows.

5.2.1 Cultural Resources and Exploitative Behaviours

The findings reveal that managers on both the DAX 4 and the Optimus projects used two cultural resources (improving product efficiency and process effectiveness, and cautious improvisation) to shape their exploitative behaviours such as alignment, and guiding refinement. These are discussed below in what follows.

Improving Product Efficiency and Process Effectiveness

As highlighted earlier, Leonardi (2011) identify increased effectiveness of organisational processes as a shared value. This value emphasises an improvement and constant update of processes within the organisation. Similarly, Rindova et al. (2011) identified improved efficiency and high quality of manufacturing as an historical cultural resource at the industry

level. The findings of this thesis, specifically how middle managers used improving product efficiency and process effectiveness as a cultural resource to enable their exploitative behaviours is similar to the findings in the studies mentioned above. Managers demonstrated an appreciation for wanting to develop the transformer and the generator products and the processes of manufacturing them. These managers spoke repeatedly about wanting to improve the products so as to remain competitive in the industry. Managers who supported and implemented the strategy of the DAX 4 and the Optimus projects respectively behaved in ways consistent with achieving the goals of the organisation because of this shared cultural resource which they had access to. This cultural resource allowed managers to behave exploitatively and orchestrate the exploitative activities on both the DAX 4 and the Optimus projects.

Cautious Improvisation

Although managers used improving product efficiency and process effectiveness as a cultural resource to enable their exploitative behaviours, they also selected cautious improvisation from the cultural toolkit to shape their actions and specifically the identified exploitative behaviours. This thesis argues that perhaps the reason why managers used this resource to shape their behaviours was because of the conservative nature of the energy industry and specifically the power generation industry. So although managers shared a collective orientation as per improving the products and the processes to make the organisation more competitive, they had an appreciation for the fact that improvements must not be rushed or done just for the sake of it. Moreover, it can be difficult for managers to convince other employees about certain improvement initiatives under conservative production processes. Perhaps, one reason why some of the managers resisted the strategy of the Optimus project may have been because they valued this cultural resource more than the other cultural resources within the organisation. Although most of the interviewed managers appreciated

the fact that disrupting the production process may cause some initial challenges (which will lead to more benefits in terms of an improved product and processes), managers who did not support the strategy of the Optimus project did not even want these disruptions to happen at all. So even as cautious improvisation was a shared norm and standard at the collective level, it was more visible in certain managers who worked on the Optimus project. This signals cultural pluralism and a degree of choice and strategy in the use of cultural resources (see Weber and Dacin, 2011; Swidler, 1986).

Another reason why this cultural resource seems to be prominent on the Optimus project may have been due to the length of service of some of the managers who contributed to the project. Some of these managers are managers who would normally not upset or unsettle the status quo due to suggestions made by other employees or customers. They believe doing this may result in having products which may fail and thus tarnish the reputation of the Brush brand. Additionally, managers selected this cultural resource from the organisations toolkit because most of the customers are very weary of untried and untested methods of production and changes in the features and performance of the transformer and the generator products. So while managers behaved in ways consistent with the successful implementation of the projects, they did so based on the cultural resources which were available to them from the toolkit and which they decided to select and deploy to shape their actions and behaviours. As highlighted earlier, it may be suggested that cautious improvisation as a cultural resource is similar to being ‘careful’ described as ‘action styles’ by Weber (2005).

Summary

Overall, the discussion of the findings presented in this section as per cultural resources which managers used to shape their actions contributes to a better understanding of the ambidexterity and the organisational culture literature. Specifically, it contributes to the

second wave of cultural analysis in organisations. The findings are also in contrast with some existing literature on organisational culture, such as those of Bate (1984) who suggest that once shared cultural meanings are established, they influence organisational members' dominant relational orientation to work and to their colleagues. This thesis claims that managers are smart enough to select diverse resources from the organisations toolkit and use this to enable their behaviours instead of the cultural values in the organisation directly influencing their behaviours. As a point of emphasis, majority of the interviewed managers shared these two resources (improving product efficiency and process effectiveness, and cautious improvisation); this includes mangers that did not fully support the strategy of the Optimus project as discussed earlier. Most of the interviewed mangers shared a strong belief in, and demonstrated an appreciation of, wanting to continuously improve and incrementally advance the organisational processes and products on a daily basis.

5.2.2 Cultural Resources and Exploratory Behaviours

The findings from the last chapter (chapter 4) reveals that managers selected two cultural resources which allowed them to orchestrate the exploratory activities on both the DAX 4 and the Optimus projects. The two cultural resources which managers picked on from the common cultural register of resources at the collective level to shape and enable their exploratory behaviours include process and product technological advancement, and receptiveness to change. These are discussed below.

Process and Product Technological Advancement

Weber (2005) in his research describe how pharmaceutical companies use cultural resources available at the industry level to formulate and implement competitive strategies. Also, as highlighted in chapter 4, in their study of how organisations use new cultural resources in strategy formation, Rindova et al. (2011) suggest that technological innovation was one of the

cultural resources in the cultural repertoire of Alessi, a manufacturer of traditional household products in metal for the catering trade and the consumer market. This cultural resource was relevant and appropriate for the industry and competing organisations in the industry would select this to inform specific practices to make them more competitive. Some similarities exists between the above and the findings of this thesis. Process and product technological advancement identified as a cultural resource in this thesis is similar to the technological innovation described by Rindova et al. (2011). In their research, Rindova et al. (2011) suggest that Alessi exemplified the importance of being at the forefront of technological innovation in its corporate motto, this was also the case at Brush. The working philosophy of Brush documents the importance of the organisation striving to be the best and constantly exceeding their competitor's achievements. Importantly, managers who were working on the DAX 4 and the Optimus projects often spoke about the need to continuously advance and satisfy the needs of customers and meet customer re-specifications.

Additional, process and product technological advancement as a cultural resource appeared to be a concrete symbolic resource widely valued and appreciated by most of the managers. At different points where managers demonstrated exploratory behaviours such as being innovative, being adaptable or where they led and encouraged change, they suggested that they did this because of an appreciation for continuously advancing the products and the processes of the organisation. Managers also suggested that they appreciated new knowledge and ideas which may assist in improving the products and processes. The continuous scanning and application of new methods and knowledge during the facilitation of activities made a whole lot of difference on both the DAX 4 and the Optimus projects. Based on this appreciation of new knowledge and managers using this cultural resource to shape their exploratory behaviours, they created an atmosphere which inspired change and allowed front line operators to be confident in adapting certain processes. This thesis thus claims that if this

cultural resource was not widely shared by managers and used to shape their actions during the orchestration of organisational activities on both projects, the projects may not have been successful.

Receptiveness to Change

Receptiveness to change was another cultural resource selected by managers which allowed them to orchestrate the exploratory activities on both the DAX 4 and the Optimus projects, as reflected in their behaviours. This claim can be made because most of the managers, especially managers who contributed to the DAX 4 project were seen to listen to the views and feedback from customers. For example, during informal conversation, they spoke about an appreciation for listening to specific changes requested by some of the main customers such as GE and Pratt & Whitney. These changes sometimes are done few weeks before the project completion date. Although such changes could cause friction and delay in the production processes, manager's still highlighted that they were open and welcoming of them. However, it must be noted that there was a conflict between the responsiveness of some of the managers and the responsiveness of the organisation. This was most visible especially with some of the managers who worked on the Optimus project. Some of these managers were managers who preferred consistency and would rather ensure that the status quo was upheld as against adapting the processes. Also, this could be because the transformer business segment was originally an independent business segment but was merged with the generator business segment in 2010. The findings show that overall, managers from the former independent generator business segment who managed the DAX 4 project were more receptive to change than managers from the former transformer business segment who worked on the Optimus project.

Scholars such as Weber and Dacin (2011) suggest that scholars should pay attention to the role of heritage and tradition in organisations. Graham and Howard (2008: 2) defines heritage as "*selective past material artefacts, natural landscapes, mythologies, memories and traditions which become cultural, political and economic resources for the present.*" Weber and Dacin (2011) also assert that infused with value and institutional residue, tradition form powerful repositories of cultural material which may bind current practices to old logics. This they claim may influence the mobilisation of cultural resources. Based on this, Weber and Dacin (2011) suggest that a future direction for the organisational culture theory development should focus on what extent organisations enlist and draw upon traditions and heritage as a strategic resource which can be used to authenticate and validate organisational activities. Other scholars suggest that traditions are strategic resources or raw material for the creation and maintenance of culture (see Dacin and Dacin, 2008). The findings of this thesis share some similarities with the existing assertions from the literature briefly describe above. This thesis found that the cultural heritage of the former transformer business segment had a spill-over effect and may have been a major reason why some of the managers who worked on the Optimus project didn't fully support the strategy of the project and valued the identified exploitative cultural resources more than the exploratory cultural resources. This claim can be made because the former transformer business segment seems to rely more on established approaches in terms of the organisational routines as compared to the generator business segment; and because most of the employees have been in the unit for over 20 years, these routines stay in place. When things change, it takes them a while to adjust (see section 4.5.1). This thesis therefore argues that traditions and heritage may constrain the ability of managers to be innovative and responsive to change.

Summary

In summary, this study shares similarities and contrasts with the body of literature. It shares similarities with the works of scholars such as those of Rindova et al. (2011) which highlights the importance of technological innovation as a cultural resource. This resource was exemplified in Alessi's corporate motto. In their study, designers of art works who valued technological innovation demonstrated a level of freedom which allowed them to break free from normal convention, the findings of this thesis mirrors the above. The findings are in contrasts with the extant body of literature which views organisational culture as homogeneous. For example, Deninson (1990) suggest that organisational culture guides behaviours and help employees achieve their daily routines by creating informal rules which spells out how they are expected to behave. This study views organisational culture as heterogeneous and proposes that greater agency should be attributed to the individual managers who are free to select diverse cultural materials and use them as pragmatic resources to shape their behaviours. The findings reveal that managers selected process and product technological advancement, and receptiveness to change to shape their exploratory behaviours on both the DAX 4 and the Optimus projects.

5.2.3 Cultural Resources and Ambidextrous Behaviours

As highlighted earlier, the perspective that values largely dictates or influences appropriate behaviours within an organisation has been at the fore front of organisational research over the last three decades (see Weber and Dacin, 2011). Similarly, the current literature on organisational ambidexterity affirms that organisational culture influences management's orchestration of ambidexterity (see O'Reilly and Tushman, 1996; Wang and Rafiq, 2012). As an alternative to the perspective that values influences behaviours, research suggest that organisational culture can be conceptualised as a toolkit of resources which organisational members can use to navigate organisational life (see Swidler, 1986; Kellogg, 2011; Weber,

2005; Harrison and Corley, 2011). On both the DAX 4 and the Optimus projects, middle managers who multitasked, made swift decisions, and were creative picked on certain resources within the organisational toolkit to facilitate their everyday actions and behaviours on both projects. As highlighted earlier in chapter four, this research identifies delivering service excellence to customers, maintaining a reputable brand, teamwork and collaboration, and upholding integrity as cultural resources which managers used to facilitate their ambidextrous behaviours on both projects.

Weber (2005) in his study identifies 63 empirically observable categories of cultural resources used in the annual reports of pharmaceutical industry. He suggest that corporations within the pharmaceutical industry could potentially use all 63 categories of resources at the industry level while placing varying emphasis on them at different times and at different levels. Also, as highlighted earlier, Swidler (1986, 2001) suggest that there are always more cultural resources available to any individual than they can use at any given time, and actors assemble specific resources for the job at hand from the multitude of cultural resources available to them. The findings of this case study reveals that at different times when managers had to juggle the multiple exploratory and exploitative activities which were being orchestrated on both the DAX 4 and the Optimus projects, they selected multiple cultural resources to enable their actions. This is consistent with the assertion of Swidler (1986) as per individuals having the liberty to select diverse cultural resources from an organisation's cultural toolkit.

Delivering service excellence to customers is reflected in the working philosophy of Brush called *service to our customers.* This philosophy encourages all employees to deliver industry leading power generation and transformer products and solutions with a high level of professionalism which sets the organisation apart from the competition in the industry. The

philosophy also encourages employees to be committed to exceeding expectations and creating positive lasting memories of good service to the customers. Also, upholding integrity is similar to another working philosophy documented in the organisations workbook called *integrity first.* This philosophy encourages every employee to be ethical and honest as well as delivering what they promised to deliver as per delivery dates and if modifications were possible. These organisational rhetoric were seen to be valued and widely shared by managers who worked on both projects. From time to time, managers highlighted how important it was to satisfy the customers even if it meant going out of their way to achieve this. These cultural resources allowed managers to orchestrate ambidexterity. For example, in justifying their behaviours such as multitasking and swift decision making, managers referred to these cultural resources and described them as their guiding principles.

Furthermore, Swidler (1986) affirm that settled cultures have the undisputed authority of habit, normality, and common sense, and under settled cultures cultural resources are not in open competition with alternative models for organising experience. The case study reveals that the cultural resources which allowed managers to behave ambidextrously were not in competition with conflicting resources or ideologies as described under unsettled cultures (see Swidler, 1986). Therefore, consistent with scholars who suggest that values do not directly shape behaviours and that organisational members can select diverse cultural resources to construct strategies of action, this thesis argues that managers picked on these cultural resources to construct their ambidextrous behaviours on both projects. These cultural resources were not only articulated, managers were seen to be comfortable with them and would use them as at when necessary. Overall, the current findings imply that most of the managers navigated the business environment with ease by picking on these cultural resources from the toolkit to shape their ambidextrous behaviours such as multitasking, swift decision making, and creativity.

Summary

To summarise, Dacin et al. (2010) suggest that the maintenance of institutional structures, especially those at a macro level, often takes place at a very micro level. Also, in their introduction to the special issue on the cultural construction of organisational life, Weber and Dacin (2011) advocate for a focus on better understanding of the micro-dynamics of institutions. They suggest that a more nuanced focus on the micro-dynamics of institutions will yield rich insights for culture and its role in institutional creation, maintenance, and change. Thus, this type of study that identifies cultural resources at the micro-organisational level is relatively rare, as most of the current research on cultural toolkits focuses on the industry level (see Weber, 2005; Rindova et al., 2011), and on the external and internal business environment (see Harrison and Corley, 2011). Whereas most studies in this emerging body of literature on cultural toolkits focus on the organisational and business environment level, this thesis focuses at the micro level. The thesis reveals how managers selected diverse cultural resources to enable and shape their actions and behaviours during the orchestration of organisational activities on both the DAX 4 and the Optimus projects. In what follows, the important contribution of middle managers as regards the orchestration of ambidexterity is further discussed.

5.3 Middle Management's Contribution to Strategy

The literature on organisational ambidexterity has mainly focused on senior management teams and CEO's (see Jansen et al., 2008; Lubatkin et al., 2006; Smith and Tushman, 2005; Cao et al., 2010; Carmeli and Halevi, 2009). Research suggest that strategic integration in organisations which involve driving innovation and benefiting from organisational capabilities occurs at the senior team level (see Benner and Tushman, 2003). Tushman and O'Reilly (1996) describe senior teams as crucial for the realisation of ambidexterity. Research on structural and contextual ambidexterity also details the fundamental roles of

senior teams in the pursuit and realisation of organisational ambidexterity (see Simsek, 2009 and Lubatkin et al., 2006). Scholars such as Jansen et al. (2008) and Jansen et al. (2009) assert that senior team attributes such as transformational leadership may assist in the integration of independent exploratory and exploitative subunits as well as in the facilitation of organisational ambidexterity.

However, this thesis considers the important role of middle managers to extend ambidexterity theory. This thesis argues that middle managers are important in promoting ambidexterity in organisations as well. Specifically, this thesis claims that middle managers are at least as important as senior managers in the orchestration of organisational ambidexterity. Although Gibson and Birkinshaw (2004) argue for the necessity of senior management teams in creating high performance behavioural contexts which encourages all employees to be autonomous and creative, this thesis argues that middle managers are in a better position to achieve this. Research suggest that middle managers are organisational linking pins who are closer to operations management and have a better understanding of everyday routinized or non-routine activity in organisations (see Raes et al., 2011and Floyd and Wooldridge, 1992). Therefore, this thesis claims that for the orchestration of ambidexterity, middle managers often have more information as regards environmental changes and they are in a better position to discover and analyse new opportunities, relative to senior management, and use this to initiate change and champion new initiatives (see Dutton and Ashford, 1993; Floyd and Lane, 2000).

Furthermore, Burgelman (1984) describes middle managers as essential drivers of strategic renewal in organisations. Currie and Procter (2005) also suggest that middle managers are active participants in the thinking and doing of strategy in organisations. Consistent with the above and other existing research (e.g. Floyd and Wooldridge, 1992, 1994, 1997; Floyd and

Lane, 2000) this case study confirms that middle managers are strategic actors in organisations and rather than at the top of organisations, middle management's involvement in strategy is of paramount importance, especially in the context of organisational ambidexterity. This claim can be made because middle managers were important to the organisational transformation and renewal of Brush through the DAX 4 and the Optimus projects which sought to improve the two main products which the organisation manufactures as well as the processes for manufacturing these products.

As highlighted earlier, ambidexterity literature has detailed the importance of senior teams as regards promoting the realisation of ambidexterity. However, this thesis claims that middle managers are also in a position to accurately sense changes in the competitive environment, including potential shifts in technology, competition, customers, and be able to act on these opportunities and threats to meet new challenges (see O'Reilly and Tushman, 2011). This claim can be made because middle managers who managed the DAX 4 and the Optimus project were able to sense the changes in the business environment (both internal and external) and made recommendations to senior management to adapt the strategies of the respective projects which they were working on. These middle managers also listened to customer views and concerns regarding the latest technological needs and were able to advise management on how these needs may be met in the short term and on a continuous basis in the long term. As an example, when the strategy of the Optimus project which was originally focused on the sole improvement of the 132 kV transmission transformer was extended to cover the 33kV transformers, middle managers were responsible for providing the needed momentum to ensure that the extended strategy was adequately implemented. Positioning this vis-a-vis existing works reveals some similarities. This finding is consistent with the assertion of Floyd and Wooldridge (1992) where they describe how middle managers provide momentum for organisational strategies. It was middle managers who recommended to the

senior management that the strategy of the project be extended due to customer re-specifications and initial successes on the Optimus project.

Additionally, Smith and Tushman's (2005) research emphasise the use of paradoxical cognition as a mechanism for balancing the tensions of exploration and exploitation. On both the DAX 4 and the Optimus projects, middle managers balanced the tensions on the projects through their ambidextrous behaviours. These ambidextrous behaviours were enabled by the selected cultural resources from the organisation's toolkit. Not only did middle managers provide the needed momentum to ensure that the extended strategies were adequately implemented, they also articulated clear visions, communicated consequences across board, and delegated to their teams when necessary. This is consistent with current research which suggest that middle manager contribute importantly to strategy in organisations (see Bower, 1970; Floyd and Wooldridge, 1997) and contribute to organisational competencies by aligning and integrating activities (see Sayles, 1993).

Floyd and Wooldridge (1992) in their research also suggest a typology of middle management involvement in strategy (see figure 1). They identify championing alternatives, facilitating adaptability, synthesising information and implementing deliberate strategy as four important and strategic roles of middle management. This typology identifies championing alternatives and facilitating adaptability as middle management divergent roles and synthesising information and implementing deliberate strategy as middle management integrative roles. The findings on the various behaviours of middle managers in this case study shares some similarities with this typology of middle management involvement in strategy. Middle managers who contributed to the DAX 4 and the Optimus projects demonstrated integrative behaviours such as aligning to plans and guiding refinement which assisted in giving the projects a coherent direction and ensuring that the short term goals were

met. Middle managers also demonstrated divergent behaviours such as innovativeness and adaptability which assisted the organisation in altering the strategies of both projects towards ensuring long term organisational competitiveness (see Currie, 1999; Pappas and Wooldridge, 2007). As an extension to existing theory on the typology of middle management, the findings suggest that middle managers can integrate both divergent and integrative behaviours through a multifaceted approach. This was demonstrated on the DAX 4 and the Optimus project when middle managers demonstrated ambidextrous behaviours which assisted in coordinating the various divergent and integrative activities which were being orchestrated (see figure 8). Though some scholars suggest that big organisations cannot re-invent themselves because of success traps (see Siren, 2012), the findings show that middle managers can assist with the re-invention and transformation of organisations in a bid to make it more competitive through these integrative, divergent and multifaceted behaviours.

Summary

Overall, the discussion in this section makes a little but important contribution to the understanding of middle management's involvement in strategy and particularly in the orchestration of organisational ambidexterity. In doing so, the call by strategy scholars who have advocated for more studies as per concentration on the 'activity based view' which emphasises micro-organisational processes and practices of key actors within firms is answered (see Pappas and Wooldridge, 2007 and Johnson et al., 2003). The findings and contribution of this thesis also answers scholars who suggest that there still remains a need for more context sensitive studies of middle manager's contribution to strategy in organisations (see Currie and Procter, 2005). Thus, this case study extends existing theory by answering the call for an investigation into middle managers contribution to strategy especially at the micro-organisational level and specifically in high-tech organisations in the energy industry.

5.4 Non-committal Managers on the Optimus Project

As highlighted in section 5.1.2 and section 5.1.4, a major difference between the behaviours of managers on the DAX 4 and the Optimus projects was that while managers on the DAX 4 project were fully committed to the strategy and the objectives of the project, some managers on the Optimus project were not fully committed to the strategy of the Optimus project when it had to be adjusted and this had some consequences. The researchers observation of these managers (a handful of them) who did not support the changes in the strategy suggest that they did not demonstrate ambidextrous behaviours like most of the other managers who supported the strategy of the DAX 4 and the Optimus projects which they were working on.

This thesis argues that perhaps one plausible reason for this could be because some of these managers were over-looked for senior management positions which were available in the Operation's Department. Some of these senior management positions (Operations Director and Continuous Improvement Director) were given to relatively newer employees who had been in the organisation for less than 2 years. Another plausible reason could be that some of these managers who did not support the strategy of the Optimus project when it was adapted were discouraged by the organisation's earlier attempts at change. There had been similar improvement initiatives within the organisation which did not really get the needed backing by the front line operators and team managers, thus, these initiatives failed. This thesis suggests that the most likely reason for not supporting the strategy of the Optimus project when it was adapted was because these managers had a cultural preference for stability. Therefore, they favoured selection of more stable cultural elements from the organisations cultural toolkit to enable their behaviours.

The researcher also observed that the behaviours of these managers who were not fully committed to the adapted strategy of the Optimus project had a direct influence on their

teams. For example, some of the shop floor operators who complained that change was happening too fast and that the change initiatives were pointless were employees working under managers who were not fully committed. Though some of the other managers who demonstrated ambidextrous behaviours spoke about these challenges (e.g. the Continuous Improvement Manager and the Engineering Resource Manager), their focus was not solely on the challenges but on how to resolve them. These managers appeared to be futuristic and more problem-solving orientated. Specifically, the Continuous Improvement Manager who noted that existing structures in some of the business units constrained innovation and change made some adjustments to the structures on an on-going basis (see section 4.4.2 and 4.4.3).

Perhaps, the length of service of some of the managers may also have been an issue. Some of them have been working in one business unit for over 20 years and change was such a big issue for them. Adjusting their routines was seen as upsetting the status quo which they had known for many years. Front line operators who were working under ambidextrous managers had to deal with the negative attitudes of some of the other operators (in other teams) who were working with some of the managers who were not fully committed to the adapted strategy of the Optimus project. These employees would sometimes resist specific change instructions and recommendations as requested by the both internal and external customers. The impact of this was that some parts were delayed and disruptions were caused in the production routines which ultimately resulted in longer lead time. During informal conversation, one of the managers who demonstrated ambidextrous behaviors suggested that he had told his team to deal with the others teams by being *'very smart.'*

In view of the different perspectives on the study of organisational culture as identified by Martin (1992) and Martin (2004) (see section 2.5.4), this thesis finds that the behaviors of some of the managers reflected a consensus across the organisation (the integrative

perspective) while a few reflected inconsistency (the differentiation perspective). The fragmentation perspective produces a fragmented view of cultural manifestations. This was not the case at the researched organisation as clear cultural and subcultural boundaries were evident. Importantly, the notion of *'cultural toolkit' or 'repertoire'* implies that cultural resources are recognised as discrete and stable cultural elements (see Weber, 2005).

Summary of Chapter

This thesis makes important contributions by identifying specific behaviours which allowed ambidexterity in practice to be uncovered. An important contribution of this research is also the identification of unique cultural resources used by middle managers in the context of exploitation, exploration, and ambidexterity. The case study further provides evidence of the importance of middle managers, especially during the orchestration of organisational ambidexterity. In the next chapter (chapter 6), the researcher will draw a number of conclusions from the study. The contributions to research and the implications for practitioners will be highlighted, limitations and suggestions for future research will also be presented.

CHAPTER 6

Conclusion

6.1 Introduction

This concluding chapter provides a summary and an overview of this study, underlining its importance and situating it within existing literature. The study extends knowledge on how ambidexterity may be built into an organisation. It focuses on the microfoundations of organisational ambidexterity, specifically the activities and behaviours of middle managers and the cultural resources used in enabling those behaviours. This research makes important contributions to theory and holds implications for practice.

The study provides evidence to support that middle managerial ambidexterity is possible in practice owing to key cultural resources, especially in large high technology firms. The study makes important contributions in three key areas. These include contribution to ambidexterity theory, contribution to the literature on organisational culture, particularly on cultural resources, and contribution to the literature on middle management. These key contributions are briefly summarised, then further discussed in the next sections.

Firstly, Scholars such as Mom et al. (2007, 2009) and Nosella et al. (2012) suggest that the current body of research on organisational ambidexterity has typically focused on the macro level, which includes both the firm level and the business unit level. Studies at the firm-level include those of Benner and Tushman (2002, 2003) and He and Wong (2004), while studies at the business unit-level includes those of Gibson and Birkinshaw (2004), and Jansen et al. (2006). There are however a dearth of studies that examine ambidexterity at a more micro level such as a single organisational process or project. Scholars such as Turner et al. (2012) and Nosella et al. (2012) call for micro-level studies of ambidexterity at the individual level, supported by Gupta et al. (2006) and Raisch and Birkinshaw's (2008) call for more studies which investigate

ambidexterity at the managerial level of analysis. This thesis answers these calls and investigates ambidexterity at the individual level, focusing on middle managers on two engineering projects at Brush Turbogenerators.

Secondly, this thesis also makes important contribution on organisational culture, underpinned by Swidler's (1986) conceptualisation. Building on the studies of Swidler (1986), Weber (2005), Kellogg (2011) and Leonardi (2011), the findings from this study improves our understanding of how individuals use cultural resources as a practical tool during the orchestration of activities in organisations. The study confirms that organisational culture is not homogeneous but heterogeneous for individual organisational members. Thus, individuals have a degree of liberty and choice in their use of culture and cultural resources.

Thirdly, as highlighted in chapter 5, this study extends the theoretically grounded typology of middle management involvement in strategy created by Floyd and Wooldridge (1992, 1997). As an extension to the existing theory, the study claims that asides the divergent and integrative behaviours of middle managers, middle managers also have the cognitive ability to balance both kinds of behaviours through a multifaceted approach, as demonstrated on both the DAX 4 and the Optimus projects. This multifaceted approach involves behaving in ways which allows both sets of behaviours co-exist, for example having to multitask to achieve organisational or project objectives.

In the concluding sections that follow, the key contributions of the study are discussed in much more detail.

6.2 Contribution to Ambidexterity Theory

Several calls have also been made by strategy scholars such as Mom et al. (2007), Turner et al. (2012), O'Reilly and Tushman (2011) and Nosella et al. (2012) for further investigation of managers' exploration and exploitation activities. This study answers these calls and extends the theoretical perspective on organisational ambidexterity by investigating how managers enact ambidexterity through specific cultural resources during the orchestration of organisational activities. The findings contribute to an advancement in our understanding of the concept of organisational ambidexterity extending existing works such as those of Mom et al. (2007, 2009) on managerial ambidexterity.

This study focuses on the activities of middle managers since extant research on organisational ambidexterity has mainly focused on senior management teams and CEO's. For instance, scholars have acknowledged that an organisation's top management team should play a key role in enabling and developing the requisite conditions for organisational ambidexterity (see Carmeli and Halevi, 2009; Lubatkin et al., 2006; Smith and Tushman, 2005; Gibson and Birkinshaw, 2004). These studies claim that senior executives play an important role in fostering ambidexterity by encouraging and nurturing exploration and exploitation. There is a conspicuous gap in the literature, however, about the pivotal role of middle managers in the orchestration of ambidexterity, with few notable exceptions such as those of Taylor and Helfat (2009) and Hodgkinson et al. (2014). Taylor and Helfat (2009) found that middle managers were instrumental linkages for the success of a technological transition which involved new core technology and complementary existing assets, while Hodgkinson et al. (2014) also identified dimensions of strategic capital that when mobilised by middle managers favour ambidexterity. The findings from this study show that middle managers are in a position to nurture and

encourage ambidexterity as demonstrated by their behaviours on the DAX 4 and the Optimus projects. From the findings, for example the findings presented in section 4.4.3, middle managers behaved in ways which ensured that the objectives of the projects were realised, even when some of these objectives were adapted. They demonstrated ambidextrous behaviours such as multitasking, creativity, swift decision making and developing others to ensure that project tasks were completed. These behaviours were shaped by the cultural resources within the organisation (as discussed in section 4.5.3).

Despite the fact that others such as Adler et al. (1999), Jansen et al. (2008), Smith and Tushman (2005), Cao et al. (2010), Lubatkin et al. (2006) and Jansen et al. (2008) posit that senior teams are important elements for ambidextrous organisations, this thesis suggest that middle managers play a pivotal role in the integration of organisational activities, especially those related to deliberate and emergent tasks. Moreover, although the above scholars suggest that given executive will to make it happen, any company can become ambidextrous, this study claims that organisations can also excel when middle management teams effectively balance strategic contradictions on projects through their behaviours. Middle managers on both the DAX 4 and the Optimus projects were instrumental to the successes of both projects by behaving in ways which promoted ambidexterity and enabling their behaviours by selecting diverse cultural resources. An example of where middle managers balanced such strategic contradictions was presented in chapter 4 (section 4.4.3) where they had to multitask and had to be creative in managing the various tasks on the DAX 4 and the Optimus projects.

Moreover, this case study makes an important contribution to the ambidexterity research by focusing on the micro-level of a large high technology firm. Lubatkin et al. (2006) argue that

SMEs have to rely more on the ability of their top management teams to attain ambidexterity. They claim this is because SMEs have fewer hierarchical levels, therefore their top managers are more likely to play both strategic and operational roles and, therefore directly experience the added dissonance of competing knowledge demands inherent in the pursuit of an ambidextrous orientation. This is clearly different from the characteristics of larger organisations which usually have distinct units and hierarchical levels. Therefore, consistent with the findings of Chandrasekaran et al. (2012), this study concludes that large high technology organisations can benefit from the ability of middle managers to simultaneously explore and exploit and balance both, specifically through the organisation's cultural resources. This is in contrast to O'Reilly and Tushman's (1997) study where they suggest that ambidexterity is driven by the top management team's internal processes in larger firms. The submission that this study makes is that in large firms, middle managers are closer to operational and strategic activities, as such are in a better position to influence the realisation of ambidexterity relative to senior managers.

Also, the study contributes to the strategy process research (e.g. Mintzberg and James, 1985; Bartlett and Ghoshal, 1993; Floyd and Lane, 2000). Strategy has been described as a pattern in a stream of decisions (see Mintzberg and James, 1985; Mintzberg and Waters, 1982; Mintzberg et al., 1986). Mintzberg and Waters (1985) describe the central theme of their study as the interplay between deliberate strategies which are realised as intended with emergent strategies which are patterns or consistencies realised even in the absence of intentions. From the strategy literature, it is suggested that organisations that are over structured (too much emphasis on deliberate strategies) may be optimised for efficiency but underperform because they either miss or cannot adapt to new opportunities while organisations that are under structured (too much emphasis on emergent strategies) may be optimised for flexibility but underperform because they are unable

to maintain a consistent strategy for capturing a stream of high value opportunities (see Eisenhardt et al., 2010). Mintzberg and Waters (1985) suggest that for a strategy to be described as deliberate, three conditions needs to be satisfied. First, there must have existed detailed intentions in the organisation, articulated in a relatively concrete level of detail. Second, they must have been common to virtually all organisational members, either shared as their own or accepted from leaders probably in response to controls. Lastly, these collective intentions must have been realised exactly as planned without interference from external forces such as market, technological, or political forces. This study confirms that the three conditions described above are difficult to achieve, as such it is unlikely to come across a perfectly deliberate organisational strategy. Research also suggests that emergent strategies are achieved over time through consistency in action even in the absence of plans and intentions to achieve it (see Mintzberg and Waters, 1985). A combination of both strategic processes was evident on the DAX 4 and the Optimus projects at Brush as presented in the findings chapter (chapter 4). Burgelman (1991) argues that this may be the most beneficial to organisations.

To summarise, the way middle managers on both the DAX 4 and the Optimus projects managed consistency and flexibility on the projects mirrors the deliberate and emergent strategy creation process described by Mintzberg and James (1985). Mintzberg and Lampel (1999) suggest that strategy is pushed along by the sheer creativity of managers, because they explore new ways of doing things. The findings of this thesis demonstrates that middle managers ensured that the strategies of both projects were adapted, thus ensuring successes on the projects and ultimately assisting Brush to sustain and improve its competitive advantage in the energy industry.

6.3 Contribution to the Literature on Cultural Resources

Importantly, a major contribution of this study is that it uncovers several cultural resources which middle managers on both the DAX 4 and the Optimus projects used to enable their ambidextrous behaviours. This contribution is underpinned by Swidler's (1986) conceptualisation of organisational culture. Swidler (1986) perceives organisational culture's casual significance not in defining ends of action, but in providing cultural components that are used to construct strategies of action. In other words, culture influences actions or behaviours not by providing the ultimate values towards which action is oriented, but influences it by shaping a repertoire of habits, and styles from which people construct strategies of action. On both the DAX 4 and the Optimus projects, the behaviours demonstrated by middle managers were influenced by these cultural resources identified in the findings chapter (chapter 4).

As presented in chapter 4 (section 4.5.1, 4.5.2 and 4.5.3) and discussed in chapter 5 (section 5.2.1, 5.2.2 and 5.2.3), in enabling their exploitative behaviours, middle managers selected 'improving product efficiency and process effectiveness', and 'cautious improvisation' from the cultural toolkit to enable these behaviours. Specifically, the findings as per the cultural resources used by middle managers to enable their exploitative behaviours are similar to that of Leonardi (2011) who identifies increased effectiveness of organisational processes as a shared value. This value emphasises improvement and update of processes in an organisation. Also, the findings are similar to the study of Rindova et al. (2011) where they identified improved efficiency and high quality of manufacturing as a cultural resource at the industry level (however, this study focuses at the organisational level). A norm shared by most of the middle managers who contributed to the DAX 4 and the Optimus project was high quality of manufacturing, continuous advancement of organisational processes, and an appreciation for improvement of the products and the

processes. These cultural resources influenced the behaviours of middle managers as exemplified during the first and second stages of both the DAX 4 and the Optimus projects. Middle managers also shared values such as stability and conservatism. These norms, beliefs and values (collectively conceptualised as cultural resources) influenced their exploitative behaviours such as alignment, and guiding refinement. Thus, this study extends current theoretical and conceptual formulations about cultural resources and specifically about organisational culture.

Additionally, positioning the findings of this study vis-à-vis existing works reveals some similarities which is useful in increasing our understanding of organisational culture and the organisational ambidexterity literature. The findings of the study reveal that middle managers selected 'process and product technological advancement', and 'receptiveness to change' as cultural resources used to enable their exploratory behaviours such as innovativeness, adaptability, and leading and encouraging change. Rindova et al. (2011) identified technological innovation as a cultural resource in the cultural repertoire of Alessi. This cultural resource was relevant and appropriate for informing specific practices to make Alessi more competitive. While the findings of this thesis on this cultural resource used by managers to enable their behaviours is similar to the above, the study further improves our understanding of this cultural resource, at the organisational level. Specifically, middle managers on the DAX 4 and the Optimus projects valued continuous generation of new ideas, flexibility as a manufacturer, and also shared various norms such as being open and welcoming of change initiatives, and listening to suggestions and feedback. These norms and values (collectively conceptualised are cultural resources) shaped the exploratory behaviours demonstrated by managers.

Further, the findings from this study have an important contribution to the literature on the cultural construction of organisational life and to the literature on organisational ambidexterity. Specifically the cultural resources used by middle managers in shaping their ambidextrous behaviours serves as an extension to current theory. Middle managers used ‘delivering service excellence to customers’, ‘maintaining a reputable brand’, ‘teamwork and collaboration’, and ‘upholding integrity’ as cultural resources to enable their behaviours on both the DAX 4 and the Optimus projects. These ambidextrous behaviours include multitasking, creativity, swift decision making, and developing others. Specifically on delivering service excellence, managers had a shared value of striving to satisfy the customers and a shared norm of putting the customers first. On maintaining a reputable brand, managers justified their ambidextrous behaviours by stating that they behaved the way they did because they wanted to maintain the standard that the Brush business is known for, and they are keen to maintaining and improving the quality of their products and processes. They also had a shared belief that if they don’t maintain the quality of the product and improve, the competition may send them out of business. Moreover, the study reveals that managers had a shared norm and valued working together, and a belief that if one department fails, then the whole business will fail.

Overall, the common cultural register of resources at the collective level at Brush served as a resource which enabled different cultural repertoires at the management level during the orchestration of ambidexterity. This study thus makes important contribution by answering the call by Weber and Dacin (2011) for more scholarship which refines and combines the methodological and conceptual toolkit of culture research.

6.4 Contribution to Middle Management Literature

Mantere (2008) suggest that many authors have emphasised the beneficial effects of middle manager involvement in strategy. However, scholars like Currie and Procter (2005) advocate for more context-sensitive studies in examining the contribution of middle management to strategy in organisations. As one of the central contributions, this study provides further theoretical and empirical evidence as regards the importance of middle managers contribution to strategy in organisations. The study contributes towards an important body of literature which argues that organisational performance is heavily influenced by what happens in the middle of the organisation, rather than at the top (see Currie and Procter, 2005). The study builds theory by focusing on the role of middle managers in improving or sustaining the competitive advantages of organisations through the orchestration of ambidextrous activities. The literature on middle management's contribution to strategy positions middle managers as key strategic actors in organisations (see Burgelman, 1983a, 1983b; Dutton and Ashford, 1993; Dutton et al., 1997; Floyd and Lane, 2000; Currie and Procter, 2005; Floyd and Wooldridge, 1992, 1994, 1997; Huy, 2001, 2011).

Moreover, Huy (2001) suggest that middle managers often have value adding entrepreneurial ideas, are better than most senior executives at leveraging informal networks (which make substantive, lasting change possible in organisations), stay attuned to employees' moods and emotional needs (thus ensuring that change initiative's momentum is maintained), and lastly manage the tension between continuity and change. The findings of this study is in agreement with the above assertion. Specifically, this thesis found and confirms that middle managers are positioned at implementing change initiatives in organisations due to their informal networks. This claim can be made because most of the managers on both the DAX 4 and the Optimus

projects have been employed by the Brush business longer than most of the senior managers and are more accepted on the shop floor by the frontline operators. This networking capability of middle managers had a positive impact on the development of both projects. This network was very important when some of the objectives of the DAX 4 and the Optimus projects (as presented in the findings in chapter 4) had to be adjusted. Middle managers on both the DAX 4 and the Optimus projects were also responsible for balancing the exploitative and exploratory tensions on both projects.

Further, the research of Burgelman (1994) demonstrates how the evolution of core competence and change in official strategy can result from middle managements influence. Burgelman's study documents the processes leading Intel Corporation to exit from dynamic random access memory (DRAM) design and manufacturing to halt capacity expansion for erasable programmable read only memory (EPROM), and to transform itself from a memory" company into a "micro-computer" company. From this study, it is also claimed that the strategy of the DAX 4 and the Optimus projects were extended due to the recommendation and influence of middle managers who contributed to both projects. Ultimately, both Floyd and Wooldridge (2000) and Pappas and Wooldridge (2007) affirm that mid-level strategic activity is probably best studied in large organisations competing in complex, and competitive business environments. Therefore, this study provides additional empirical support for existing theoretical arguments (e.g. Burgelman, 1983a, 1983b; Dutton and Ashford, 1993; Floyd and Lane, 2000; Currie and Procter, 2005; Floyd and Wooldridge, 1992, 1994, 1997; Pappas and Wooldridge, 2007; Huy, 2001, 2011) about middle management's involvement in the definition and execution of strategy, especially in large organisations.

6.5 Implications for Managerial Practice

This study has implications for both practitioners and managers alike. Results from earlier research indicate that organisations that simultaneously pursue both exploitative and exploratory strategies (i.e. ambidextrous organisations) enjoy long term survival, sustainability and superior performance (e.g. Gupta et al., 2006; Jansen et al., 2006). Research also suggest that a firm's ability to compete successfully in the long run may be rooted in an ability to jointly pursue exploration and exploitation (see Raisch and Birkinshaw, 2008). However, the challenge to simultaneously execute exploitative and exploratory strategies cut across various organisations and diverse industries. First, since the dynamism in industries are different, this thesis suggests that in different situations and conditions, diverse strategies might be required to improve the competitiveness of organisations. In the electrical power generation industry, this thesis recommends efficient strategies which are adaptable on projects and in business units.

Second, Chandrasekaran et al. (2012) argues that ambidexterity competency is associated with business unit performance in high technology organisations. As a result, these organisations can benefit from the ability to simultaneously explore and exploit as well as the ability to balance between the two. This thesis claims that middle managers are in the best position to orchestrate this balance because they are closer to operational activities as compared with senior managers. Therefore, middle managers may encourage their teams to balance business needs during the orchestration of organisational activities in a bid to improving competitiveness.

Third, from a managerial perspective and with specific emphasis on middle managers, this study found that ambidexterity may be orchestrated through managers selecting diverse cultural resources from an organisations cultural toolkit to enable their behaviours. It is important that the

behaviours and cultural resources identified are incorporated into training manuals for mid-level managers across large high technology firms in the Energy Industry.

6.6 Limitations of the Study and Future Research

Several limitations of this study are worthy of discussion and the results of the study must be considered in light of its limitations. First, the study adopts interpretivism as a methodological approach. This research method is typically associated with the qualitative research methods. This assisted the researcher in understanding the researched organisation from the perspective of participants within the organisation (see Lee and Lings, 2008). Using the qualitative research method also assisted the researcher in understanding the experience of managers, especially during the orchestration of organisational activities.

Second, the research data was analysed using thematic analysis. After the initial through thematic analysis, the researcher utilised the Nvivo software to analyse the transcribed research data. Using an in-depth case analysis, to the knowledge of the researcher, this study is the first to systematically describe cultural resources employed by managers during the orchestration of ambidexterity. However, due to the qualitative approach taken and the adoption of a subjective world view, and the study been built upon a single case, the researcher cannot generalise the results to a much wider sample.

Third, the scope of the study is limited to large high technology organisations. Therefore issues such as the generalisability of the research are of concern. Even though the study focused only on one large high technology organisation in the energy industry, it is likely that the findings also contribute to our understanding of the orchestration of ambidexterity in SME's in other industries. However, it should be noted that the ultimate purpose of an interpretive case study

like this current study is not the creation of a generalised theory, but instead to maximise realism (see Harrison and Corley, 2011) and focus on the accuracy of interpretations to provide detailed insight into the ambidexterity phenomenon from the perspective of those closest to it.

Fourth, the study is also subject to the general limitations associated with field research (see Burgelman, 1994). A suggestion for future studies is to focus on how ambidexterity is being orchestrated at the managerial level in SME's and other industries different from the energy industry. Scholars may also focus on how the behaviours of middle managers during the orchestration of ambidextrous activities can assist organisations in improving their long term performance.

6.7 Concluding Comment

The case study is an insightful case of how middle managers at Brush Turbogenerators orchestrated ambidexterity by selecting various cultural resources to enable their behaviours. The study aimed to deepen our understanding of organisational ambidexterity, especially management's orchestration of it through the cultural resources available to them. Nosella et al. (2012) suggest that future research may benefit from a return to the construct's definition, which emphasises the nature of ambidexterity as a capability. This study therefore concludes and suggests that ambidexterity is an important capability which can be used to sustain or improve the competitive advantages of organisations, at the mid-managerial level thus extending our knowledge of ambidexterity. The researcher hopes that by generating these important insights the knowledge on ambidexterity has been expanded. However, more context sensitive studies are required.

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Appendix

Appendix A: Research Proposal

3th July 2012

Research Proposal to Brush Turbogenerators

The purpose of this research is to understand how *BRUSH* are able to pursue both efficiency and flexibility in its operations to improve performance and also to understand how senior / middle level managers, across strategic business units are able to maintain long-term direction while simultaneously promoting flexibility and innovation.

Consequent to the above, I seek to understand how *BRUSH* actively promotes development of new capabilities and competencies to meet future needs, and how senior/middle level managers promote organisational efficiency and flexibility; and, how this combination of activities leads to improved performance.

Research Access Required

I would be very grateful for the opportunity to interview senior / middle level managers at *BRUSH*. Access to conduct interviews across Business Units will fit the purpose of this research. I would be available to start my research from October 2012.

Research Output

Please let me assure you that any information collected will be treated in the strictest confidence. Only I will have access to interview transcripts. No individual responses will, at any time, be made available to anyone other than myself. The transcription of interviews will not even bear the name of the individual respondent or organisation, ensuring personal and organisational anonymity.

Should you wish, I will send you a summary of the study's main findings, in recognition of your generosity in assisting Loughborough University School of Business and Economics in our research endeavours. If you have any questions regarding the research project, please do not hesitate to contact me.

Yours sincerely

Dipo Awojide: Doctoral Researcher, School of Business and Economics, Loughborough University, United Kingdom. Email: D.Awojide@lboro.ac.uk

Appendix B: Letter from Supervisor

School of Business and Economics

Loughborough University Leicestershire LE11 3TU UK

Switchboard: +44 (0)1509 263171 www.lboro.ac.uk/sbe

Loughborough University

Direct Line: 01509 223865

E-mail: I.R.Hodgkinson@lboro.ac.uk

7th July 2012

To whom it may concern

Subject – Mr Dipo Awojide

As research project supervisor, I am writing to confirm that Mr Dipo Awojide is registered as a full time student on the PhD Programme within the School of Business and Economics (Business Division) at Loughborough University, and I confirm he is in full attendance. His registration commenced on 1 December 2011.

If you require any further information please do not hesitate to contact me.

Yours faithfully

Dr Ian Hodgkinson

Appendix C: Letter to Managers

12th November 2012

Research Purpose

The purpose of this research is to understand how middle managers at Brush Electrical Machines Ltd are able to simultaneously pursue efficiency and flexibility/innovation.

I seek to interview middle managers across business units to understand how they promote efficiency and flexibility/innovation. Also, I seek to interview senior managers to understand how they influence middle management activities. I will require about 40 minutes – 1hour for each interview.

Research Output

The outputs to be generated from the research include:

1. **Practitioner Report:** Summarised report on findings with practical relevance to Brush Electrical Machines which may assist middle managers in thinking about how they can actively promote the development of current and new capabilities and competencies to meet future needs. Also a report on findings which may assist senior managers in thinking about how they can influence middle management activities which in-turn will promote organisational efficiency and flexibility; and ultimately improved organisational performance, revenue growth and operating margin improvement.

2. **Academic Papers**: Posters, papers for conferences, and publications in academic journals.

Confidentiality Assurance

Please let me assure you that any information collected will be treated in the strictest confidence. Only I will have access to interview transcripts; no responses will, at any time be made available to anyone else. The transcription of interviews will not bear the name of the individual respondent, thus ensuring personal anonymity.

Yours sincerely,

Dipo Awojide

Doctoral Researcher, School of Business and Economics, Loughborough University.

Doctoral Researcher, Brush Electrical Machines Ltd. Dipo.Awojide@brush.eu

Appendix D: Interview Guide

PHASE 1: <u>Organisational Culture</u>

1. Does Brush have the ability to reorganise its processes as quickly as possible?
2. Please describe the management style at Brush; do you feel it encourages you to challenge current traditions?
3. How does Brush empower middle managers?

    A. Are you encouraged to experiment as a middle manager?
    B. Are you allowed to make constructive mistakes?
4. Do middle managers at Brush have an understanding of the mission of the organisation?

        A. Are they committed to them?

5. How does Brush maintain consistent policies and processes?
6. How will you describe the organisational culture of Brush?
7. What values do you hold in high esteem?
8. How does these values influence your behaviours?

<u>How the project started</u>

1. How do you adjust structures, processes, and people to fit the current strategy?
2. How did you ensure the implementation of the strategic plans on the project?
    A. What adjustments do you make in the processes?
3. How was the product quality improved?
4. How did you ensure that there was co-operation on the project?
5. How did you settle problems between teams and subunits?
6. How did you build support for innovative ideas on the project?
7. How do you seek new ideas from other departments and maybe externally?
8. How was the Optimus/DAX 4 strategy implemented?
    A. What challenges did you have?
    B. What effect has the Optimus/DAX 4 project had on the organisation?

<u>How they adjusted</u>

1. How did you sought and support innovative ideas on the project?
2. What do you do when established routines and behaviours no longer fit the current circumstances?
3. How did you lead and champion new initiatives?
4. Is information sought on new market segments and new customer groups?
5. Can you tell me about how you remain on the lookout for changes in the environment, and do you have the capacity to re-adjust accordingly?
6. How did you encourage experimentation with new skills and processes?
7. How did you guide the process of adaptation?
8. How did you facilitate learning?

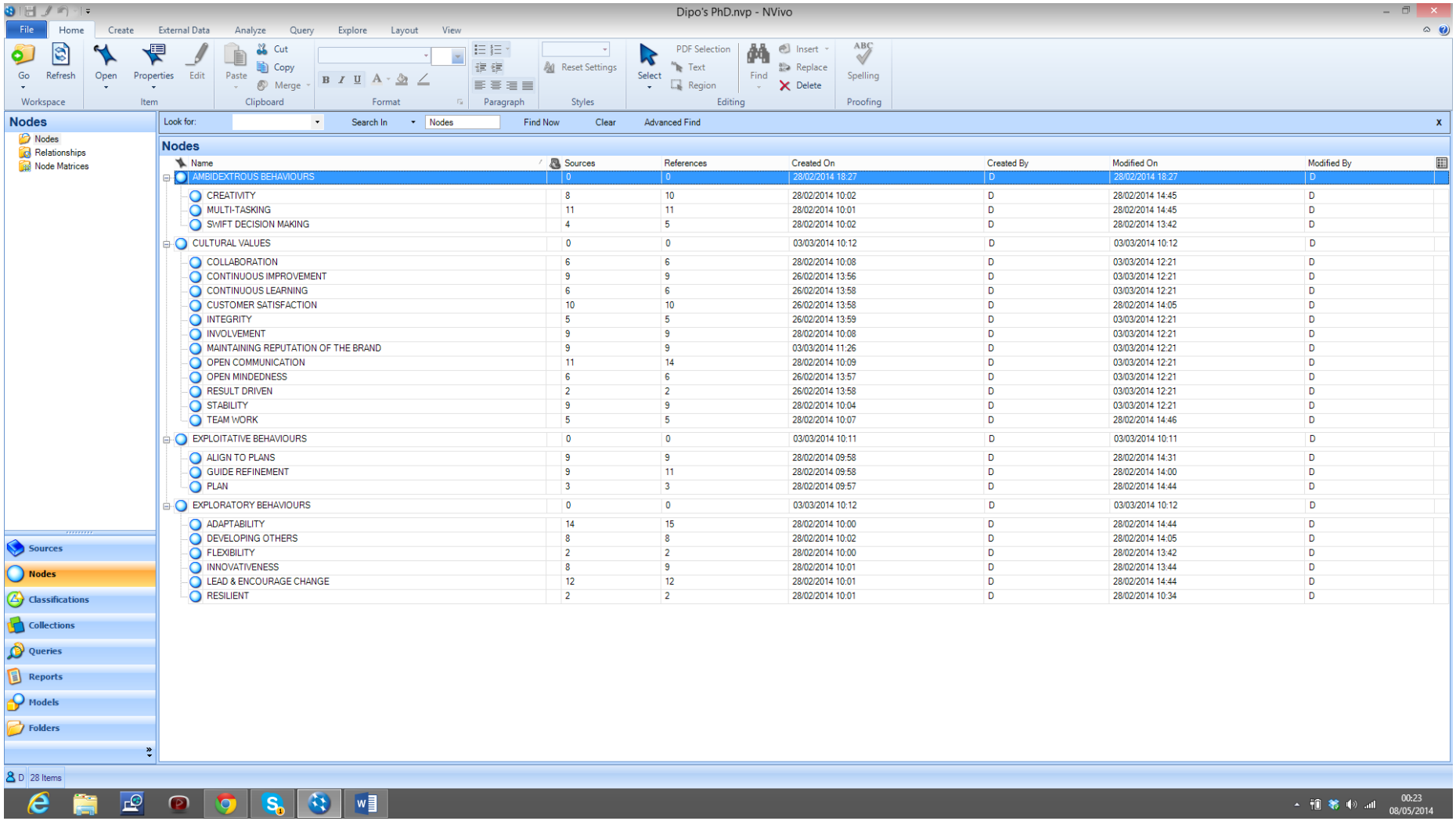
9. How did you with enhancing competences in searching for new solutions?
10. How did you assist with acquiring technologies and skills entirely new to the business?
11. How did you get involved with facilitating the acquisition of entirely new managerial and organisational skills that are important for innovation?
12. How did you behave when you needed employees to abandon old routines and make commitments to new course of action?
13. How did you build involvement and support for new processes?
14. What other behaviours do you demonstrate while leading the development of new processes and competencies?

How they simultaneously explore and exploit

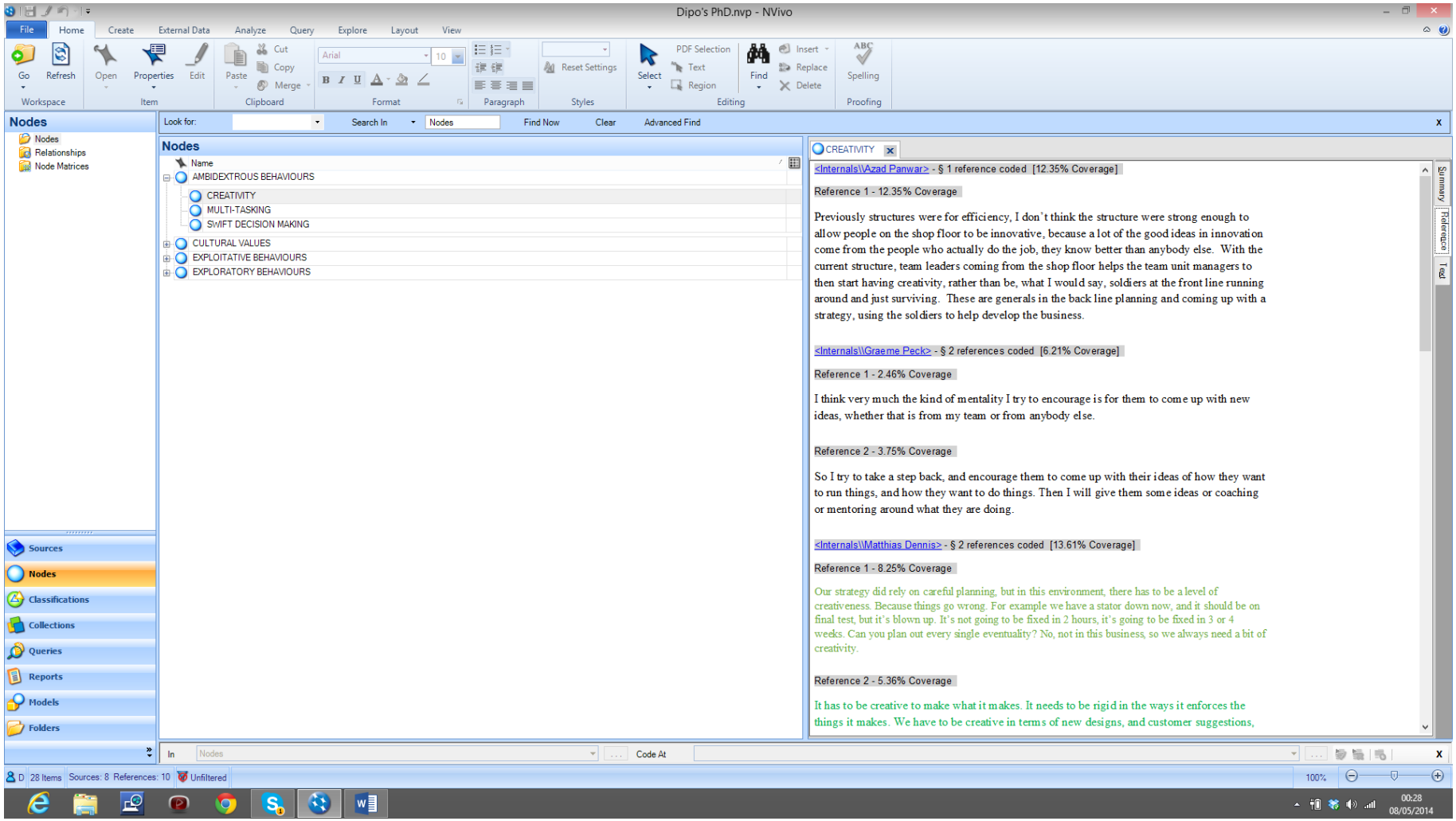
9. So as the project continued were you more inclined to established approaches or to experimenting?
10. Did you rely more on improvisation than on careful planning on the project?
11. How would you rate the orientation of Brush (and specifically yours), can you please explain if it can be described as creative or rigid?
12. Can you help me understand if structures on the project were designed mainly for efficiency or for innovation?

    A. Is there a mix-match of both?
13. How did you balance efficiency and flexibility?

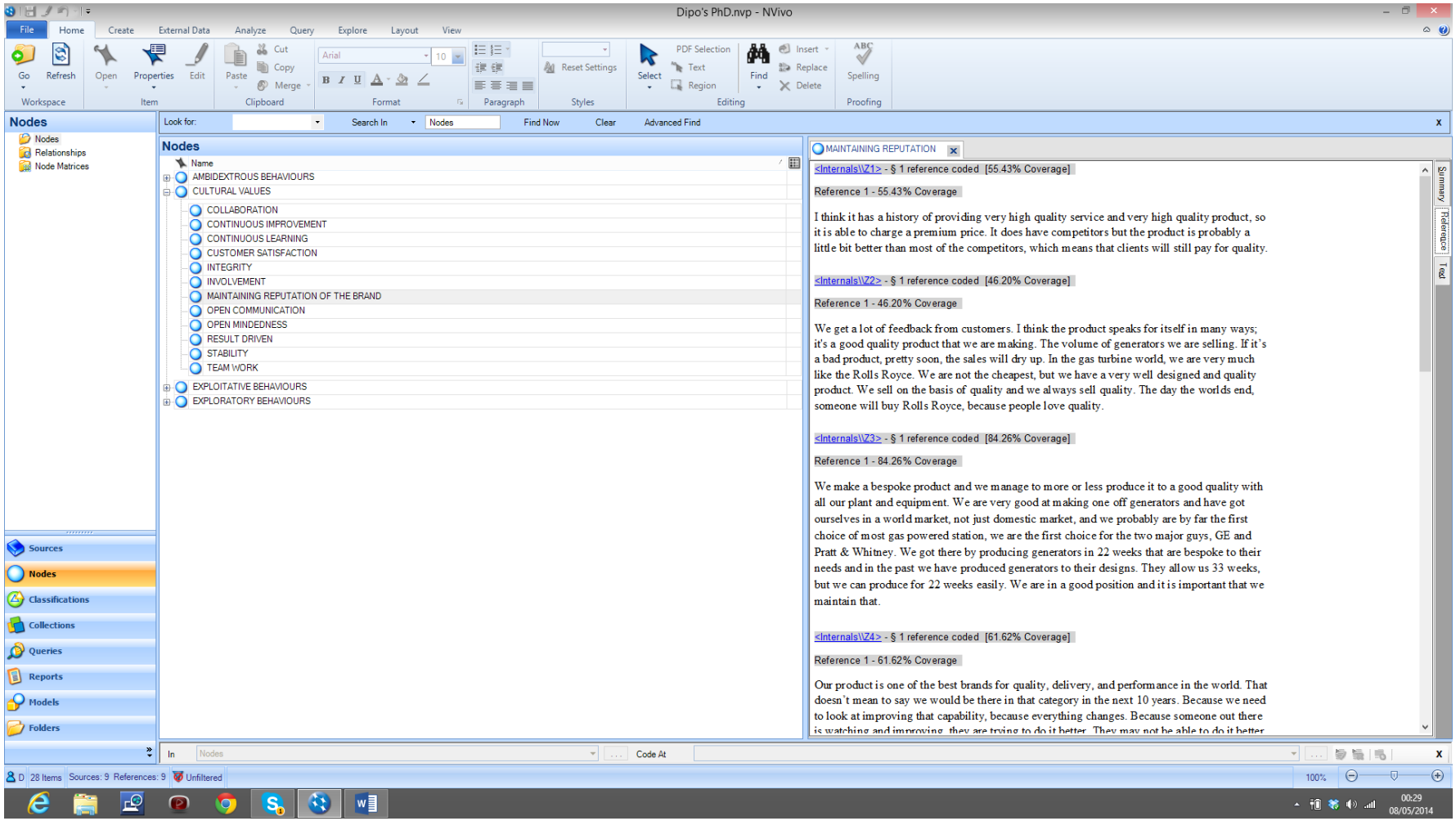
Appendix E: Overall NVivo Coding Tree



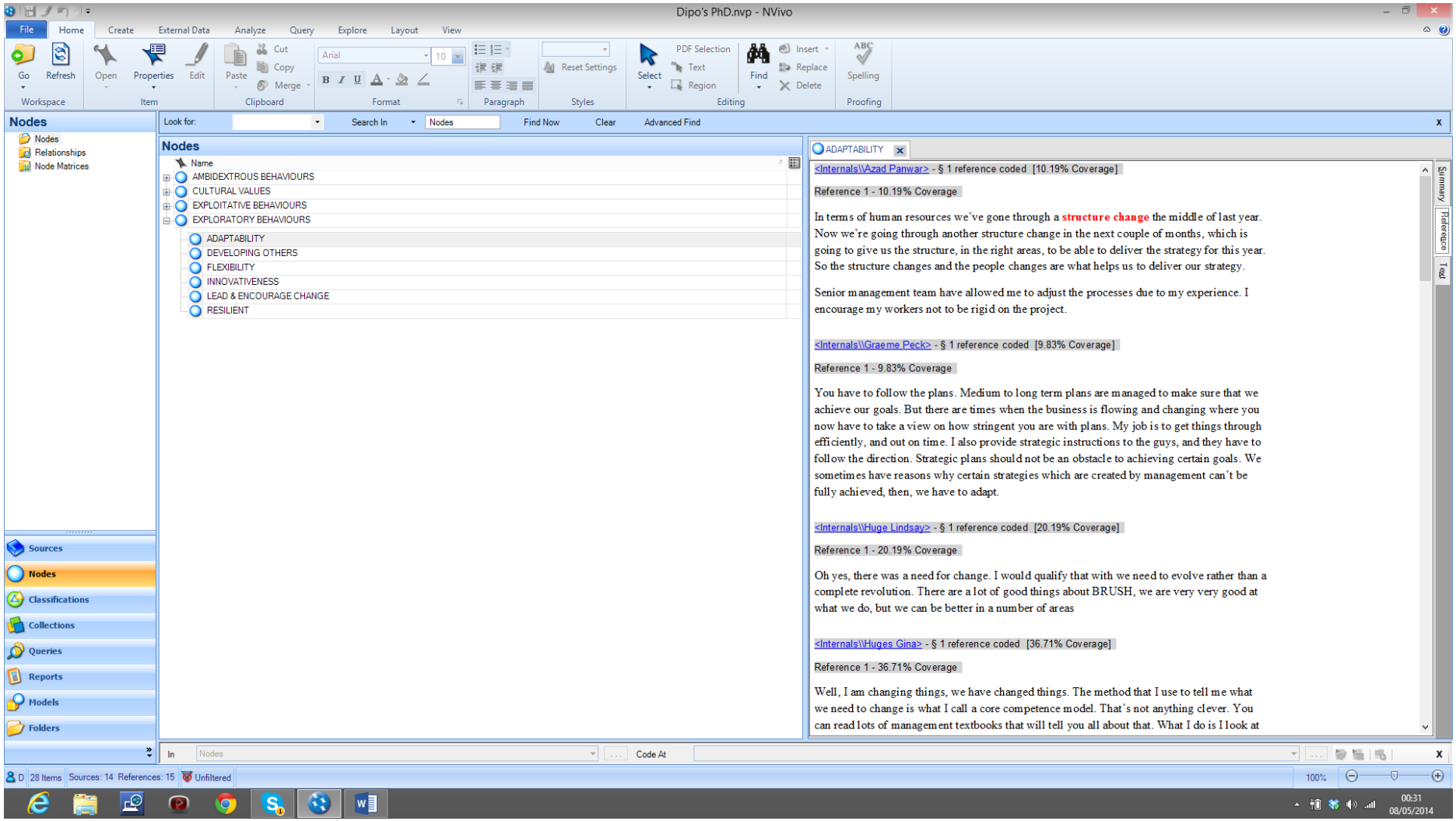
Appendix F: Coding Tree of Ambidextrous Behaviours



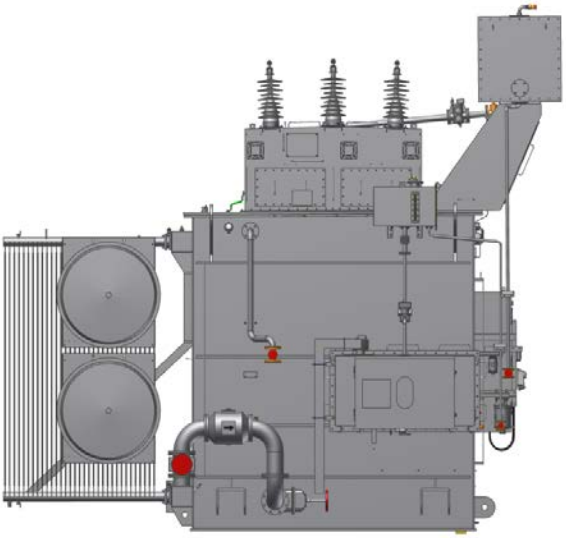
Appendix G: Coding Tree of Cultural Values (Resources)



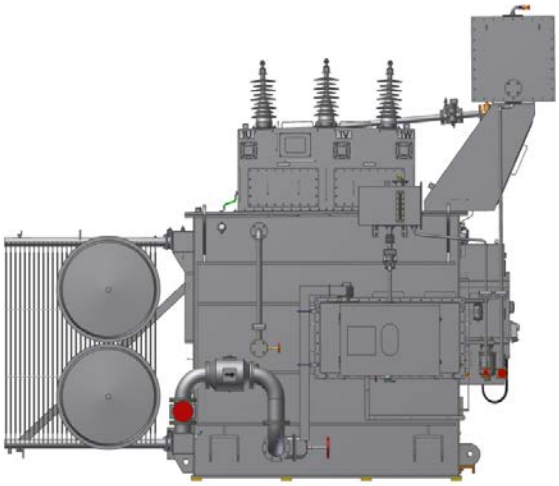
Appendix H: Coding Tree of Exploratory Behaviours



Appendix I: Result of Optimus 33kV Transformer



Before Optimus Project



After Optimus Project